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## Evidence Before the Select Committee

THE minutes, published this week, of evidence given before the Select Committee on Nationalised Industries earlier this year when it examined the working of British Railways throw sidelights not apparent in the Select Committee report. The latter was summarised in our July 29 issue. Much of the evidence relates to the prospects of profits from railway modernisation, schemes which would suffice to pay interest on new capital and to service existing capital as well. The Committee in its report stated that it was surprised at the way in which the British Transport Commission set in motion large schemes without comparison with alternative schemes. This is shown in the evidence. When the chairman, Sir Toby Low, asked whether the Ministry of Transport had examined whether diesel traction would have given a better return than electrification of the Euston-Manchester-Liverpool line, the Permanent Secretary, Sir James Dunnnett, answered that his Ministry had seen no figures. The reaction of Sir Toby Low was expression of "surprise and horror." One may wonder

whether he appreciated the extent to which many factors were weighed in deciding on electrification. Up to the end of 1959 programmes of reorganisation or development "involving substantial outlay" were submitted to the Minister of Transport, examined by the Ministry and re-examined by the Treasury from a general standpoint, and then, approved in general. Several demands were made in view of the general state of the Commission finances, that the total amount of the programmes be reduced, but it was left to the Commission to decide how these reduction should be made. Last February a new system was introduced. All development plans entailing expenditure in excess of £250,000 must now be submitted to the Minister and examined in detail. The Commission delegates to the Regions of British Railways authority to sanction projects up to £100,000, but those costing between £100,000 and £250,000 can be sanctioned only by the B.T.C. This absurd restriction no doubt is the result of over-optimism on the part of the Commission as to some projects. [Answers on the profitability of types of railway service were not regarded as satisfactory—though allowance must be made for the complexities of inter-Regional accounting. Nevertheless, in view of the facts ascertained, the Select Committee could hardly have come to any other conclusion than that on the evidence it had received, there was no doubt that a large-scale railway system could be profitable.

## Mr. E. F. C. Trench

THE many civil engineering works carried out on the London & North Western Railway in the earlier years of this century make Mr. E. F. C. Trench, who died on September 15, aged 91, one of the most notable L.N.W.R. Chief Engineers since Robert Stephenson. His career, including periods of service on the Midland and North London Railways, covered an eventful period of railway history. He began a term of pupillage in 1893 under E. B. Thornhill, then Chief Engineer of the L.N.W.R. His major achievement was, perhaps, the widenings at Chalk Farm and elsewhere in the London area, began before the war of 1914-18. His responsibilities were increased in 1922, on amalgamation of the Lancashire & Yorkshire with the L.N.W.R., and again in 1923, on formation of the London Midland & Scottish Railway, the largest railway undertaking in Britain, of which he became Chief Engineer. He retained his connection with the L.M.S.R. after resignation in 1927, as its Consulting Engineer. Trench was a likeable man whose competence and long and varied experience gained him prestige in his profession. He was President of the Institution of Civil Engineers in 1927-28. His last public act was his unveiling, as a vigorous octogenarian, on November 3, 1950, of the centenary memorial plaque on Robert Stephenson's Britannia Tubular Bridge over the Menai Strait.

## Machine Tool Prospects

NEW orders received by the British machine tool industry in July, the latest month for which figures are available, were valued at some £14.5 million. Orders from the United Kingdom accounted for £11 million of the July figure; they have increased faster than have export orders. At the end of the month total orders on hand for the industry were valued at some £93.3 million, or over a year's work, and the largest value on hand for three years; that is not far below the peak of 1955-56, and nearly double the value of orders a year ago. The main cause of the improvement in the home market is the rise in capital investment by private industry. British Railways and London Transport Executive, which have re-tooled in many of their works and depots, seem unlikely to increase their orders to more than a fairly steady flow, though the prospects of further orders for motive power, and rolling stock, may prompt builders to invest in further tools.

## Plans for C.I.E. Railways

CLOSURE from March 31, 1961, of the 5-ft. 3-in. gauge West Cork (former Cork Bandon & South Coast Railway) and the physically isolated Waterford & Tramore lines and of the 3-ft.-gauge West Clare lines of Coras Iompair Eireann and replacement of rail by road services are announced by the Board. Except for small stations which it may be neces-

say to close as unremunerative, the plans now announced are the final substitutions, as far as can be foreseen, of rail by road services which the management of C.I.E. envisages within the five-year period set out by the Transport Act of 1958. Under that Act, the C.I.E. must provide "reasonable, efficient, and economical" services, but the Board may substitute road for railway services if there is no prospect of the latter becoming economic within a reasonable period. The plans now published are the result of a survey of railway services. Account was taken of the effect on the service to the public of the withdrawal of the passenger or goods services concerned; but until details of the road services are announced, it is impossible to judge whether railway users will suffer.

### Economies Through Improved Services

**B**Y substitution of road for rail services on certain unremunerative lines, Coras Iompair Eireann hopes to reduce its working cost by some £80,000 a year. In addition, unless certain specific traffics, for which C.I.E. is negotiating are secured, train services on the Macmine Junction to Waterford and the Muinebeag to Palace East sections must also be substituted by road services at the end of March. It is also the intention to consolidate the existing lines and to continue to intensify efforts to provide satisfactory rail and road services. Progress is being made in modernising railway rolling stock and in implementing an extensive programme of mechanisation and modernisation of stations and depots. One of the main intentions of these latter improvements is in transshipment of goods between rail and road, so as to effect better co-ordination of the modes of transport. The management is confident that with the continued co-operation of the staff and of the trades unions, and with understanding by the public of the problems involved, C.I.E. can achieve its objects.

### Overseas Railway Traffic

**C**ANADIAN Pacific Railway revenue for August, 1960 amounted to \$38,368,746 compared with \$40,264,178 in August, 1959. Railway expenses for the period were \$36,261,070 compared with \$37,909,253, resulting in net earnings for the month of \$2,107,676, compared with \$2,354,925 for the same period last year. Aggregate net earnings for the period January 1 to August 31, 1960, were \$19,728,637 compared with \$22,100,621 in the corresponding period of 1959. Net railway earnings of the West of India Portuguese Guaranteed Railway Co. Ltd. for the 10-day period ending September 10, 1960, amounted to contos 753, an increase of contos 69 compared with the corresponding period of 1959. In the following 10-day period there was an increase of contos 381 over the corresponding period for the previous year, which can be accounted for largely by a very considerable increase in goods traffic.

### North Eastern Region Staff Problems

**J**UST as the modernisation plan is changing the whole conception of railway practice, facilities, and equipment, it is necessary for the methods of selecting and training railway staff and management techniques for dealing with staff matters to keep pace. The progress made in this field in the past 10 years by the North Eastern Region, British Railways, and the success achieved with various schemes adopted, are outlined in an article on pages 424-426 by Mr. S. J. Judson, Regional Establishment & Staff Officer. As an example of pre-planning, the staff establishment in the civil engineer's department has been reduced by some 1,000 men without a single dismissal. Already some 70 per cent of the permanent-way maintenance staff is employed on a payment-by-results basis; by the end of this year the figure will be 80 per cent. The article also shows the great improvements made in working conditions and amenities which help to increase productivity.

### Apprentice Training School at Swindon

**T**HE training school for motive power craft apprentices being built by the Western Region, British Railways, at Swindon, is in accordance with the scheme drawn up by the British Transport Commission for recruitment of trade and engineering apprentices. The scheme includes a period of

training in a works training school, and provision is made in the motive power training scheme for craft apprentices at depots readily accessible to a main works possessing a school, to receive training at that school. The school at Swindon is to cater for an intake of approximately 150 apprentices yearly. A site was selected on Commission property, immediately outside the main works. The building is planned as one large workshop, covering some 11,000 sq. ft., spanned by monitor roof trusses. This is surrounded on two sides by a two-storey block containing lecture rooms, library, common room, washing facilities, and staff accommodation. A two-storey combined assembly hall, gymnasium, and cinema adjoins the entrance hall. The building is set on a concrete ring beam faced with white mosaic, with Staffordshire blue engineering bricks beneath. The work is expected to be completed, and the school to be in operation, in 1962. The architect, the late Mr. H. E. B. Cavanagh, Architect of the Western Region of British Railways, under the direction of the Chief Civil Engineer, Mr. M. G. R. Smith.

### New U.I.C. Headquarters Building

**C**ONSIDERABLE room for expansion of activities is to be left on the new headquarters building of the International Union of Railways (U.I.C.) in Paris. The foundation stone was laid last month by Professor H. M. Oeftering, Chairman of the U.I.C. and Senior Chairman of the German Federal Railway, as described elsewhere in this issue. The need for co-operation between railways in different countries in technical and commercial matters is increasing as the need to improve services, effect economies, and concert action grows in the face of more intensive competition from other forms of transport and as greater industrial and commercial activity demand quicker and better rail services. The activities of the U.I.C., therefore, are likely to be intensified, and the new buildings in the Rue Jean Rey will enable work to be done more efficiently in better conditions. The scope of the Union was outlined at last month's ceremony by Professor Oeftering. The U.I.C. is a utilitarian organisation, and its work is strictly practical. Its members include railways outside Europe. British Railways is an active participant; Mr. John Ratter, Member of the British Transport Commission, who with a strong British delegation was present at the laying of the foundation stone, takes office next December as first British President of the U.I.C.

### More Orders for L.T.E. Tube Stock

**O**RDERS to the value of £4 million placed by London Transport Executive are for 619 further 1959 tube stock car bodies and bogies to complete the renewal programme for the Central and Piccadilly Lines. Deliveries are to begin in February, 1962, and to be completed by the end of 1963. Derby Works, British Railways, London Midland Region, is to build 169 trailer cars—an indication of railway works capacity. The rest of the 619 vehicles, namely, 338 driving and 112 non-driving motor cars are to be supplied by the Birmingham Railway Carriage & Wagon Co. Ltd. Much of the equipment for these cars, such as motors and traction control equipment, has been on order since 1959, but further orders remain to be placed. Of the 589 cars of 1959 tube stock being built by the Metropolitan-Cammell Carriage & Wagon Co. Ltd. more than 150 are now running on the Piccadilly and Central lines. All are expected to be in service by mid-1962, and deliveries against the present orders should enable the whole rolling stock replacement programme for both lines to be completed by the end of 1963. The Birmingham Railway Carriage & Wagon Co. Ltd. built one of the three 1956 stock prototype trains on which the 1959 stock is modelled.

### Peruvian Corporation Railways Development

**T**HE modernisation and extension of the Peruvian Corporation Railways in the southern area of the country should go a long way towards encouraging the development of this potentially-rich, though at present under-developed, region. Work on the first stage of the scheme, which has already begun, should be completed during the next two years. The sum of 110 million soles will be spent on building rail communications to serve 1,758 sq. miles of arable land which is at present only



sparsely cultivated. A standard gauge line will be laid between Haudquina and Quillabamba, a distance of 26 miles, and a third rail will be laid as a temporary measure to accommodate the narrow-gauge stock used at present on the Cuzco-Santa Ana route. The second stage of the programme is the conversion of the Cuzco-Santa Ana line to standard gauge and its incorporation in the main railway system serving the southern part of Peru, while the third stage comprises the extension of the line from Quillabamba to a navigable point on the river Urubamba. This will create a transcontinental route from the port of Mollendo in Peru to Belem do Pará in Brazil, so enabling goods to be carried from the Pacific to the Atlantic coast.

### Canada—Alaska Trunk Line Proposed

**E**XTENSION is under consideration of the proposed Pacific Northern Railway through the Yukon Territory of Canada to Whitehorse, and on to Fairbanks, some 200 miles in the State of Alaska; and an economic study is being made. This was announced recently by Mr. P. D. Gagliardi, British Columbia Minister of Highways. He was addressing the first conference of the three Governments of British Columbia, Yukon, and Alaska, during which transport matters were discussed. The route for the railway has been surveyed. It is estimated that the total cost including financing, construction, rolling stock and equipment, will be \$250 million. The gauge will be 4 ft. 8½ in. and motive power probably will be diesel locomotives, with, perhaps, some railcars, because of the proximity of the southern end of the new railway to the oilfields of Western Canada. The terrain generally is difficult, and some major civil engineering works will be needed.

### An Encouraging Accident Report

**A** DECREASE in fatalities caused by accidents on British Railways in 1959 is one of the main facts shown in the report for the year to the Minister of Transport of Brigadier C. A. Langley, Chief Inspecting Officer of Railways. Some of the principal features of the report are given on pages 418-420. Only one passenger was killed in train accidents last year. This fatality, the result of an open-door collision at Liverpool Street Station, Eastern Region, compares with 18 fatalities in 1958 and 92 in 1957. There were, however, 34 deaths among passengers in movement accidents, due mainly to misadventure and carelessness when entering and leaving trains in motion, falling off platforms and out of carriages, and opening and closing carriage doors. Action has been taken to impress on staff the risks of contact with high-voltage overhead electric traction equipment. Included for the first time is a series of graphs showing accident trends since 1946. The two graphs reproduced in this issue show total fatalities in the working of the railways year by year since the war, and the extent to which passenger fatalities in train accidents are largely fortuitous. For example, during 1959 a crowded express travelling at high speed was derailed at Slough, yet the passengers escaped virtually unhurt; but the accidents at Harrow in 1952 and at St. John's, Lewisham, in 1957, resulted in two of the worst disasters in railway history and accounted for nearly 40 per cent of the total passenger fatalities since the war. Since 1946 the fatality rate in train and movement accidents combined has been halved; collisions and derailments have dropped by one-third; accidents caused by technical defects are not much more than one half; and failures of rolling stock and permanent way are less than one-quarter of the 1946 numbers. These improvements are attributed to better maintenance of equipment and to the provision of additional safeguards since 1946, including the extension of A.W.S., conversion of distant signals from semaphore to colour-light, provision of track circuits and block controls, and modernisation works in general.

Suggestions that the advent of the diesel motive power unit, with its more silent approach, has increased the hazard to men working on the permanent way are not borne out by the accident record of 1959. The dangers which arise when trespassers, especially children, venture on to the line are stressed and a vigorous educational campaign among children and parents is urged.

In general, the situation revealed in the report is encouraging. The year's total of 1,154 train accidents is the second lowest

since the war and it is 6 per cent less than the average of the first 10 post-war years 1946-55. The rate per million train miles, however, has remained steady at 2.8 for the last three years. The number of failures of rolling stock, permanent way, and so on, has again fallen substantially. Failures of coupling apparatus which account for between 70 and 80 per cent of the total have now been reduced to 915, compared with 4,299 in 1946, a drop of 79 per cent. This very satisfactory result, Brigadier Langley states, is due to the scrapping of large numbers of old goods wagons, introduction of more vacuum-fitted freight stock, and the fitting of more reliable types of coupler to both goods and passenger stock. The reduction in the number of broken rails during the year is also encouraging, especially after the set-back in 1958 when numbers rose for the first time since the war; the 1959 total of 183 is the lowest recorded, and it is 65 per cent lower than the 1946 figure of 522. This reflects the constant efforts made by the permanent way staff to improve standards of inspection and maintenance.

The progress made in the reduction of failures is reflected, but to a less marked degree, in the downward trend of accidents caused by technical defects. The number of accidents caused by the three major classes of defect, though tending to fluctuate from year to year, has been falling: the reduction in those resulting from engine defects has, however, been slight. The introduction of large numbers of diesel locomotives, and more particularly multiple-unit sets, has produced fresh problems and a number of accidents to this type of stock occurred during the year.

Accidents caused by the direct failure of the human element also dropped slightly to 609, but there has been little improvement in recent years and the number is still too high; it is nearly 53 per cent of the total for all train accidents.

Train accidents caused by drivers passing signals at danger have in the past accounted for a large number of the fatalities and it is therefore desirable to pay particular attention to this type of accident. At the request of the B.T.C. the Medical Research Council is now investigating all such cases of human error. The Council has appointed a committee on the human factor in railway accidents which had its first meeting in December, 1959. The major investigation at present being undertaken is a statistical study of all the circumstances that may possibly have some relevance to the driver's error in every case when an adverse signal is passed. Preliminary observations of conditions at the driving position of various types of locomotives are being made to determine what further information may be necessary. The British Transport Commission and the trade unions concerned, the report points out, are actively co-operating in this work and it has been possible for members of the committee to attend, as observers, inquiries held by the inspecting officers.

In assessing railway safety, Brigadier Langley emphasises, the record of train accidents should be examined, and primarily that of accidents for which the railway management and its staff must accept responsibility, namely accidents caused by human failures and by technical defects.

There has been a decline in the number of accidents resulting from signalmen's mistakes and drivers passing signals at danger. By contrast it is disappointing that accidents caused by other human failings including other irregularities committed by enginemen, and combined mistakes between enginemen, signalmen and other staff, have in general been increasing since the war, and the number last year was 13 per cent greater than the average for the first 10 post-war years. Had the first two types of accident followed this upward trend, accidents arising from signalmen's mistakes would by now have been 90 per cent greater and there might well have been 2½ times as many accidents from drivers having passed signals at danger. This marked difference in trend, the report states, is largely due to the provision of the safety measures. The accidents from the other types of human error arise largely from errors of judgment, misunderstandings, carelessness or indiscipline, against which physical safety measures can have little effect.

Safety on the railway, the report concludes, depends upon the maintenance of high standards of discipline and morale, upon the vigilance of the staff, their concentration on their work, and their intelligent compliance with the rules: upon the provision of adequate aids and safeguards: and upon the proper maintenance of track, structures, equipment, locomotives and rolling stock. The report shows to what extent

these ideals are being achieved; but, it adds: "To maintain, let alone improve, the present high safety standards, requires a contented, well disciplined staff who take a pride in their work and in the fine organisation to which they belong and who must be assured that British Railways will continue to play a vital role in the life and prosperity of this country."

### British Railways Choice of A.C. Traction

**I**NAUGURATION of British Railways Electrification Conference by Sir Brian Robertson, Chairman, British Transport Commission, at the Institution of Civil Engineers last Monday, was the start of a comprehensive review of British experience and progress with the now highly-developed a.c. system of electrification. In his opening remarks Sir Brian Robertson said that the intention of the Conference was to show everybody that British Railways had got something which would interest the delegates and British Railways wanted to display it and discuss it. Over 40 different railway administrations were represented, and he found it particularly pleasing to welcome the delegates most warmly, not only on behalf of the Commission, but also of the British Electrical & Allied Manufacturers' Association and the Locomotive & Allied Manufacturers' Association who share with the Commission the responsibility of the conference. For British Railways, and the railway engineering and manufacturing industry in Britain, the conference was a great event. He believed it would be a landmark in British railway history. Railways were now faced with fierce competition from other forms of transport. To meet this competition they must arm themselves with the most efficient and economically effective weapons.

Steam, he said, was rapidly giving way to diesel traction and electrification. Of these two neither could be said to be better than the other. Given certain conditions, notably a line carrying consistently dense traffic, no other system of traction yet devised could combat competition so effectively as electrification with alternating current at high voltage and industrial frequency. In the case of British Railways that meant the 25-kV. 50-cycle a.c. system. British Railways experience of that system, the technical problems involved, and the progress made were the concern of the meeting.

The reasons for the adoption by the B.T.C. of the 25-kV. 50-cycle system were outlined by Sir Brian Robertson. The decision to adopt this system was not an easy one. At that time the 1,500-V. d.c. system was already in use and was showing good results. It would have been highly convenient for the Commission to continue with a system which involved relatively few technical problems and which promised comparatively rapid results. The high-voltage a.c. system, on the other hand, presents many technical problems; yet it not only opens up possibilities of considerable economies, but also produces clear advantages in operating efficiency.

This theme was amplified by Mr. S. B. Warder, Chief Electrical Engineer, British Transport Commission, in the introductory paper of the conference. His purpose was to explain why electrification was regarded by the Commission as the ultimate objective for movement of traffic. The first part of the paper dealt with the reasons which had led to the choice of the 25-kV. a.c. 50-cycle system. The reasons for electrification, as he explained, must satisfy every one of the three prime conditions, economic, technical, and operational. One of the great difficulties has always been the determination of a common basis where the new method could be compared on a like-for-like basis with the old. The difficulty, as Mr. Warder pointed out, is that with electrification the prime mover is removed from the train. This is its technical strength but its economic weakness. It is its strength because it removes items which could fail and are costly to maintain, while unlimited power, most efficiently produced, is always on tap. The weakness, if it is really a true weakness, is the cost of providing fixed installations capable of providing energy greatly in excess of that previously used by what Mr. Warder terms "an inferior type of tractor" in the movement of fewer ton-miles. Consequently, electrification can only be justified where the traffic is heavy or frequent. There are also many cases when electrification by itself has created traffic by its own efficiency. British Railways, Southern Region, services are an outstanding example of producing the revenue for its extension by its own success.

Features peculiar to British Railways were considered by

Mr. Warder in the second part of his paper. Such features necessitate special arrangements. The equipment supplied and the problems encountered in electrification in Britain were described in the paper. Solution of these problems is making it possible to bring the 25-kV. system of electrification into use on 184 route-miles comprising 535 single track miles in 1960, followed by a further 134 route miles and 376 single track miles in 1961, as a first instalment of the a.c. electrification schemes included in the modernisation plan. The schemes that have been completed this year are very diverse in character. Most of them are suburban schemes, and in the mileage mentioned above no account has been taken of the very considerable task of converting the Liverpool Street-Chelmsford-Southend line from 1,500-V. d.c. to a.c. almost overnight. The first section of the Manchester-Crewe scheme includes the whole of the Crewe complex of yards and sidings and is only a first instalment of a major main-line electrification.

Because of the wide spread interest in the cost of suppressing interference to telecommunication circuits at the source by the use of booster transformers and return conductors, Mr. Warder stated that the net additional capital cost of providing such equipment was assessed as being in the order of 5 per cent of the total cost of fixed equipment, when the full scheme with return conductors was used, taking into account the economy that was possible in the screening of railway signalling and telecommunication circuits by doing so. Only the essential features of the equipment that had been used and the problems that had been encountered were given. Subsequent papers to the Congress have developed these themes and provided opportunities for their appraisal and discussion.

### Pan American Railway Congress

**T**HE plenary session of the Pan American Railway Congress, to be held in Brasil on October 11-27, resembles the quadrennial sessions of the International Railway Congress Association in that the meeting is divided into sections, each of which considers reports on several questions on matters in which the section specialises. Unlike the I.R.C.A., the Pan American Congress does not seek to achieve agreement on the wording of resolutions on each subject; these are not binding members of the Association, and attempts to achieve agreement have absorbed time and energy which might have been spent on useful exchanges of views on the reports, which contain much information collated by specialists, apart from the informed views which delegates can express at meetings.

The five sections of the Pan American Congress are: A, Way, Structures & Signalling; B, Motive Power & Rolling Stock; C, Operation, & Co-ordination of the Means of Transport; D, Charges, Statistics and Accountancy; and E, Management, Staff, Legal & General Matters. The five subjects to be considered by Section A include mechanisation of work on the permanent way, and one general question on signalling, including C.T.C. Only three questions are arranged for the mechanical section: one each on passenger vehicles, wagons (including special types), and locomotives (electric, diesel, and turbine). Operating and allied matters are considered in five questions. Among these is one, No. 10, on ways of promoting traffic, including containers, piggy-back transport, and refrigerated wagons. Co-ordination of the several forms of transport is programmed as a single subject, and the intention seems to be to consider it mainly from the aspect of legislation necessary to direct traffic into the chosen means of carriage. The remaining two sections, D and E, deal respectively with five and six subjects under headings such as mechanisation of accountancy and statistics, and public relations. From the apportionment of the number of questions it seems that the restricted number allotted to technical matters will afford more fruitful discussions. Those discussed by Sections A, B, and C are likely to prove the most useful to delegates. Among non-technical matters, social conditions and legal systems differ in the several countries, and discussions on matters such as co-ordination of transport tend as a result to be vague. In way and works and motive power and rolling stock the delegates will have much information to exchange. Even so, it is strange to find only one question on signalling.

The congress will assemble in Rio de Janeiro on October 11, move to Sao Paulo on the 21st, and on to Brasilia, the new Federal capital, for the last day, October 27. Delegates will have an opportunity of travelling on the Santos Jundiáhy



(former Sao Paulo) Railway, and seeing the ropeworked incline. Visits include the plants at Sao Paulo of the Fabrica Nacional de Vagoes S.A., and of the Material Ferroviario S.A. Mafersa, both of which produce passenger, including electric multiple-unit, vehicles, and goods wagons; of the Cia. Brasileira de Material Ferroviario (Cobrasma), makers of passenger and goods vehicles, of the Cobrasma works producing signalling equipment; and the Sao Paulo factory of the Freios e Sinais do Brasil S.A. (Fresinbra), which supplies signalling and allied equipment.

The President of the Pan American Congress Association is Senor Eduardo M. Huergo, a former General Manager of the Argentine National Railways. All the countries of South America and most of those of Central America will be represented by national delegations. The British delegation will be headed by Brigadier C. A. Langley, Chief Inspecting Officer of Railways, Ministry of Transport, and the other members will be Mr. D. S. Purdom, Technical Consultant, English Electric Co. Ltd., representing the Locomotive & Allied Manufacturers' Association; Mr. S. E. W. Stokes, Representative in South America of the Westinghouse Brake & Signal Co. Ltd.; and Mr. E. J. Wilson, General Manager (Contracts), Metropolitan-Cammell Carriage & Wagon Co. Ltd., representing the Railway Carriage & Wagon Building Association. The head of the U.S.A. delegation will be Mr. Daniel P. Loomis, President of the Association of American Railroads. Mr. C. E. R. Sherrington, Director, Research Information, British Transport Commission, has contributed a paper on commercial aspects of railway traffic.

### The "Europ" Wagon Pool

SINCE 1922 the regulation of goods wagons of European railways running outside their home network has been through the agreement known as R.I.V. (Regolamento Internazionale Veicoli). This agreement is administered by the R.I.V. Union, of which most of the European railway administrations are members. In general, the most important clauses have been that each railway has to return wagons to the home system with the least possible delay, preferably loaded. All wagons belonging to any railway loaded and sent forward to a destination on another railway in another country have been considered as on hire to the second administration. As from January, 1953, wagons under this arrangement were charged 2.0 gold francs a day up to the 12th day, 3 gold francs a day thence to the 20th day, and 5 gold francs a day from the 21st day; but from January 1, 1958, the charges have been 5 gold francs per day from the 1st to the 15th day, and 6 gold francs a day thereafter. Natural desire to evade these charges has led to much empty wagon mileage.

Despite the many conveniences of this scheme compared with pre-1922 procedure, it also has had its drawbacks, which have become intensified with intensified international traffic; and on May 1, 1951, the French National and German Federal Railways began a common pool of 100,000 wagons, each contributing 50,000 vehicles. The operation of this pool was considered so satisfactory—the book-keeping it saved must have been immense—that eight more Continental countries joined in; and from March 15, 1953 (following a conference of European general managers at Berne), Belgium, Italy, Switzerland, Holland, Austria, Luxembourg, Denmark and the Saar have also been parties to what is known as the "Europ" agreement, governing the use of a pool of what is now over 190,000 open and covered wagons, all marked "Europ" in addition to the initials of the owning company. These wagons need not be returned to the home railway at the earliest possible moment from the system of any of the other eight signatories, and any wagon in the pool may be used for internal traffic on the receiving railway up to the time when a suitable load can be found for it back to its own country.

To prevent any unfavourable balance, and to try to ensure that each of the participating railways has at all times a number of Europ wagons approximately equal to the number it has contributed, a numerical balance of wagons of each general class is struck by the controlling Bureau des Wagons Europ, located at Berne, to which telephone reports are made each day by the frontier transit stations. Where unequal traffic flows prevent this balance being maintained, a compensation of empty wagons is made, these wagons being taken from as near the frontier as possible of the system with the plus balance.

Should this not prove practicable almost immediately, a compensation payment is made to the system which has a debit balance of "Europ" rolling stock. Also, member administrations whose stock of "Europ" wagons exceed their contribution, are charged a rental. Railways which are not in the "Europ" pool may get and handle pool vehicles, but according to the standing R.I.V. regulations.

A corollary of this agreement is that the wagons contributed to the pool must have dimensions, fittings and characteristics suiting them to operation over the lines of all nine countries; and, as far as new wagons are concerned, an eye also must be kept on the probable enlargement of the pool's members. These necessities cover not only dimensions but the general maintenance and servicing work which may be required, for wagons may be away from their home system for weeks and months. Inspection is supposed to be carried out by the owner once every three years at owner's expense; and as that date approaches, the wagon has to be returned home.

General standards of construction have been drawn up by the International Union of Railways (U.I.C.) to which new wagons built by any of the "Europ" signatories and which may be used in the pool must conform, except for certain very specialised stock. These standards apply to many more or less special-traffic wagons of the types normally found on several railway systems, such as the new Deutsche Bundesbahn covered wagons with sliding roofs, and the same system's multi-trough side tipping wagons. But, according to the U.I.C. Bulletin of 1959, it has not been found practicable to include flat wagons in the pool, largely because the importance of flat wagons differs greatly among the member administrations. By this means economies and general convenience of operation are not only being realised, but after a few years a great part of European freight rolling stock will be alike in many of its parts and general characteristics, and fully up to the needs of "common user."

### Russian Enterprise in Africa and Asia

NOT since the beginning of this century, when Imperial Russia was building railways towards the Persian and Indian borders, has there been such Russian interest as there is today in railway development to the south of the Soviet Union. The Russian lines in Central Asia were built, partly for strategic reasons, as extensions of the railway system in European Russia, and construction followed Russian practice, and was on the Russian 5-ft. gauge, as, in general, does the method of working today. This applies also to the Russian-built and Russian-worked lines adjacent to the borders of Mongolia and China.

In the past few weeks U.S.S.R. activity is reported as planned on railways in three countries remote from Russia. As in Central Asia, the motives are largely political. An agreement between the Governments of the U.S.S.R. and Iraq provides for construction of a 4-ft. 8½-in. line, or conversion to standard gauge of the existing metre-gauge line, from Baghdad to Basra. Russian technical staff is assisting with the survey work. Motive power—presumably diesel—and rolling stock and other equipment are to be provided from the U.S.S.R. Conditions in Iraq do not differ very greatly from those on railways in Turkestan, and, except perhaps for signalling procedure and material, the project presents few difficulties for Russian railwaymen. The same can be said of the railways to be built with the help of the U.S.S.R. to develop oil resources in the United Arab Republic (Syria). Here again traffic will probably be worked by Russian-built diesel locomotives.

The third field of expansion for U.S.S.R. railway enterprise is very different. Russia is to help the Government of Guinea to "re-build" the Guinea Railways line from the port of Conakry into the hinterland. Whether re-building entails widening of the present metre gauge to 4 ft. 8½ in. or some other gauge to increase carrying capacity, or whether it implies only strengthening of bridges or easing of curves, is not known. If, as is expected, traffic increases as economic resources in the interior are developed, the new motive power and rolling stock will almost certainly be obtained from the U.S.S.R. It might later replace French-built diesel motive power and vehicles. This is the first Russian railway venture in tropical Africa. It remains to be seen how technical staff from the U.S.S.R. will accommodate itself to life on a railway built largely through tropical forest, and how far Russian industry

can provide locomotives and other material to work in social and other conditions quite unlike those in Central Asia. The progress of this Russian venture in West Africa will be watched with interest.

### Progress in N.W. Pakistan

**G**ROWTH of traffic on the North Western Railway of Pakistan and improved performance in handling it are described briefly in a statement from the headquarters of the railway, of which Mr. N. A. Qureshi is General Manager. The progress of industrialisation is rapid, and under the First Five-Year Plan the N.W.R. is called on to meet the increasing movement demands presented by over-age rolling stock and track on which it has taken some time to make good the arrears of maintenance inevitable during the war and the immediate post-war period.

Passenger journeys numbered 67,791,000 in 1949-50, 103,189,000 in 1957-58, and 106,250,000 in 1958-59. Similarly expansion has occurred in freight movement. The number of goods trains run has increased from 53,072 trains in 1949-50 to 87,384 trains in 1958-59. Against 7,176,000 tons of freight carried in 1949-50, the total tonnage in 1958-59 was 12,642,000. This was conveyed 3,552,401,600 ton-miles.

To deal with the additional traffic over 500 passenger vehicles have been placed in service since 1950. Because 71 per cent of passengers travel less than 50 miles, orders for 24 railcars and 24 trailers were placed abroad out of which 15 railcars and 24 trailers have been received and are to be introduced gradually in the Lahore, Multan, and Rawalpindi Divisions. The progress in the construction of wagons and coaches in the N.W.R. Central Workshops at Moghalpura will go far to improve the stock position.

Diesel-electric locomotives were introduced in 1951. The 176 units forming 22 per cent of the total locomotive fleet earn more than 39 per cent of the total locomotive mileage on the broad gauge. Their effect on the speed of fast trains, now being chiefly hauled by them, is stated to be encouraging—but no great accelerations are apparent in the published passenger timetables.

Progress has been made in provision of further amenities in passenger rolling stock and at stations and in improving facilities for handling goods traffic. Major works completed since the war include construction of branch lines and plans for a railway to serve the suburban area of Karachi.

### Midsummer Freight Train Traffic

(By a correspondent)

**I**N four weeks from mid-July to mid-August, 1959, freight train traffic on our railways fell to the low amount of 13,494,000 tons. This year's tonnage increased by 801,000, nearly 6 per cent, to 14,295,000, but was fully 2,000,000 tons below 1957 and almost 2,900,000 less than in 1953. To handle the larger traffic, the railways worked 40 million, or 4 per cent, more ton miles than in 1959, but freight movement was 22 per cent below their 1953 effort.

Neither does some of the extra work pay the railways well. Merchandise and livestock traffic in midsummer increased by 51,000 tons, or 2 per cent, on last year; 8,595,000, or 2.5 per cent, more ton miles were worked in consequence, but merchandise receipts declined by £48,000, or 0.7 per cent. Figures for 32 weeks to August 14 confirm the narrowing of the profit margin for carrying high-class goods. While merchandise tonnage was up 1,985,000, or nearly 10 per cent, and 260 million, or 8 per cent, more merchandise ton miles were recorded, and receipts increased by £1,768,000, by less than 3 per cent.

Mineral forwardings were a godsend. In four weeks to August 14, they were 631,000 tons, or 19 per cent, higher. The resultant ton miles were up less than 10 per cent and receipts rose by over 12 per cent. Over 32 weeks of this year, an increase of 5,631,000 tons, or 18.5 per cent, in minerals led to a 14 per cent advance in ton mileage and a rise of 12.4 per cent in receipts.

Coal output has dropped by 6 or 7 per cent this year. It was a surprise, therefore, to find that 119,000 more tons of

coal and coke were put on rail in the four weeks of midsummer. That increase of 1.5 per cent in quantity meant an advance of 4,683,000 in coal and coke ton miles, say one per cent, but receipts were down £73,000, or 1.2 per cent. Over 32 weeks coal class tonnage was up 1,413,000 tons, or 1.6 per cent, but ton miles were down 125 million, or 2.5 per cent, and receipts were lower by £2,848,000, or 4.2 per cent.

The coal mining industry is passing through a crisis which affects the Regions of British Railways in curious ways. In 32 weeks the North Eastern Region originated 24,163,000 tons of coal and coke, an increase of 1,220,000 tons, or 5.3 per cent, and worked 35,297,000 more coal and coke ton miles, a rise of 5.5 per cent. It forwarded 27 per cent of the aggregate coal class tonnage of our railways and worked about 14 per cent of the ton miles for the whole system. That is a remarkable result, seeing that the palmy days of overseas coal shipments from the ports of North East England are merely a memory.

## Letters to the Editor

(The Editor is not responsible for opinions of correspondents)

### Locknuts

September 27

**SIR**,—In the report of the Chief Inspecting Officer of Railways, Brigadier C. A. Langley, on the accident to the Glasgow-London express on January 22, 1960, when part of the right-hand motion of a "Britannia" class engine came adrift, I note that "... various types of locking nuts have been tried but none has been found satisfactory." This is strange, because certain manufacturers of locknuts claim that once the nuts have been tightened with a spanner, no amount of vibration will shake them loose. It follows, therefore, either (a) that the claims of the makers of such locknuts are not substantiated, or (b) that the proper type of locknut has not been used on the "Britannia" class locomotive.

Which is true? The answer is important, because the new diesel and electric locomotives must depend on such nuts, especially if they are stationed in places not easily reached for maintenance purposes.

Yours faithfully,

G. RICHARD PARKES

The Thorns,  
Hadfield, Manchester

### Rubber Suspension of Vehicles

September 28

**SIR**,—In your issue of July 29, 1960, you re-printed part of a letter to the *London Evening News*, under the caption of "No Joys of Spring." Whilst your reason for giving publicity to this alleged criticism can be attributed to a sense of fun, we would point out that overseas it could be misconstrued.

The writer was recently in Canada in order to interest railway officials in Metalastik rubber suspension, similar to that adopted by London Transport Executive. One official brought the offending re-print to our attention and asked for an explanation. Whilst in this case it was not difficult to satisfy our potential customer, we feel there may also be others whose suspicions have needlessly and unfairly been aroused.

We would not have thought that unqualified publication of frivolous criticism by an anonymous correspondent of an evening paper was in the best interest of the industry which your journal serves so well.

F. E. SHEPPARD,  
Group Sales Manager (Railways)

Metalastik Limited,  
Evington Valley Road,  
Leicester

[We are sorry that our readers should have regarded frivolous remarks as serious criticism of Metalastik rubber suspension. The latter has been described in this journal, and the good riding qualities of L.T.E. stock so equipped are well known.—ED., R.G.]



## THE SCRAP HEAP

### "One Prolonged Slump" (1900)

The course of Home Rails during the present year seems to have been little more than one prolonged slump, one disaster following on the heels of another in a most disheartening way to holders of these securities. Home Railway stocks have long been the favourite securities of a large body of investors, and the fall in prices and dividends is a matter of great concern to many thousands, the backbone of whose income is represented by the interest and dividend derived from these securities.—*From "The Financial Times" of August 27, 1900.*

### Mailbag Robberies

Have the mailbag bandits a secret weapon? Yes—a medium-sized screwdriver. That . . . is all you need to break into any of the luggage vans which daily carry thousands of pounds worth of registered mail. The vans are locked only with "carriage locks," the key for which is a square-ended metal bar. But a screwdriver of the right size will do just as well. "Security-minded? Of course we are," said a British Transport Commission spokesman. "But losses are so few that it is financially not worth while taking extra precautions to prevent them . . ." The Post Office points out that the number of mailbags stolen in a year—300 to 400—is infinitesimal compared with the million bags on the move each day.—*From the "Daily Mail."*

### Driving Urge

A 24-year-old man was not content to watch the trains go by. He wanted to drive them . . . The nearest he ever got to his heart's desire was as an engine cleaner [on British Railways] when he was 15. He lost the job after two years. But as a labourer he still dreamed his dreams, and on May 26 his dream came true. He drove a locomotive at Cheltenham engine shed—60 yd. up the line, 60 yd. down. Four days later he was summoned to appear in court on July 7. The charge was: unlawfully setting a steam locomotive in motion, thereby endangering the safety of persons then being upon the railway. But on July 5 his strange urge got the better of him. He did it again. This time he drove an engine more than 100 yd. down the track and left it neatly parked with the brake on. The story ended at the Gloucester Quarter Sessions when he was put on probation for three years.—*From the "Daily Express."*

### Victoria Station Centenary

Without any official ceremony, Victoria Station, London, was opened for public traffic on Monday morning, October 1, 1860. In the words of a contemporary newspaper, "The doors were thrown open, passengers took their tickets, and the trains started as though the line had been in working order for years." It was built and owned by the Victoria Station & Pimlico Railway Company, which was, in effect, a "terminal company" of a kind well known in the

U.S.A. but unusual in British railway practice. This separate company survived until railway grouping in 1923. Throughout the 19th century, this important main-line terminus, within 400 yd. of Buckingham Palace, presented a rather surprisingly unprepossessing exterior aspect, with temporary timber buildings and a courtyard enclosed by wooden paling. In effect, it was two separate stations, "Brighton" and "Chatham," not linked until 1924. The "Chatham" side retains much of its form as completed in 1862. The "Brighton" side was completely rebuilt and greatly enlarged in 1908, when the platforms were lengthened.

### Barrel-shape Passenger Compartments

In *The Railway Engineer*, August, 1883, an account was given of an ingenious device to "minimise the loss of life and destruction of property that takes place in a railway collision." It was proposed that the end carriage should be collapsible, thus taking the shock from the remainder of the train, and it was claimed that the construction of the carriage, designed by Messrs. Bennett and Rosher, took full account of the safety of passengers travelling in it. "According to their designs each compartment of the carriage should consist of a separate cylindrical steel or iron shell lined with wood, of a diameter equal to the ordinary height of the body of a carriage, and laid across the frame alongside one another. There will be three or more of these, and the principle is that in case of collision the soles and frames will crush, but not the compartments. These will roll, the middle one, in the case of three, being forced up between the other two. Thus the passengers inside them, beyond being shaken, will not be otherwise injured." In effect, this remarkable carriage resembled three beer barrels on a flat wagon.

### Salesmanship

I am not prepared to give British Railways any traffic in future when it can possibly be diverted to other means.

My reason for taking this stand is that the instance of overcharging and dogmatic attitude against consideration of reasonable rates has forced me to this conclusion. It would be well if those in authority would recognise that industry is working under heavy pressure and cut margins and that it is not possible to pay excessive rates. The sooner this lesson is learned the better for all concerned.—*From a letter from a trader to the Line Traffic Manager, London, Tilbury and Southend Line, Eastern Region, British Railways.*

We should like to express our appreciation of the courtesy afforded us by your Mr. Body and the very efficient manner in which he dealt with our problems. We feel sure that had the difficulties with which we have recently been confronted been handled in a similar way, this unfortunate impasse would not have arisen.—*Letter from the same firm, one week later.*

[Mr. G. Body is Head of the Commercial & Development Section of the Line Traffic Manager's office.—Ed., R.G.]

### Helpful Booking Clerk

I went to the station and found I had left my wallet behind and had insufficient money for my ticket. The booking clerk said: "That's all right, sir. Give me the two 'bob' (the only change I had) and pay the other when you come again."

I know he recognised me as a regular traveller but he need not have been so helpful.—*From a letter to the "Evening News."*

### Europe's Last Big Tank Engine

The 4-8-4 tank locomotive of the Czechoslovak State Railways shown in the illustration was built by C.K.D. between 1951 and 1956. It is fitted with mechanical stoker, all-welded boiler, and double Kylchap exhaust. It is believed to be the last large tank locomotive to be built in Europe. Diesel traction has now replaced some services in Czechoslovakia formerly worked by tank engines.



Photo]

[A. E. Durrant

Suburban train near Prague, Czechoslovak State Railways, hauled by 4-8-4 tank locomotive

## OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

### SOUTH AFRICA

#### Heavy Load by Rail

South African Railways last month conveyed a stator of some 110 tons from the Durban docks to Umgeni power station near Sarnia. The load, which was 18 ft. 11 in. long and 11 ft. in diameter, was carried on a well wagon with a carrying-capacity of 246,400 lb. Travel was restricted to daylight and a maximum speed of 25 m.p.h.

### CANADA

#### Tank Hopper Wagon

Canadian National Railways and the Roberval & Saguenay Railway Company recently took delivery of four aluminium hopper wagons at a ceremony at Marine Industries Limited in Sorel. The new design of welded wagon, known as the Alcan tank hopper, was developed by Aluminium Company of Canada Limited engineers working with the Mechanical and Research Departments of the C.N.R. Engineering details and new fabrication procedures were established by engineers at Marine Industries Limited. The new design of wagon will be able to carry nine tons more payload than existing C.N.R. hopper wagons, will be easier to unload, and more readily adaptable to different types of service.

Three of the wagons will go into service immediately, carrying bulk materials such as lime, cement, alumina, gypsum, adipic acid and polyethylene. One of the wagons bought by the C.N.R. will be subjected to an intensive series of tests. The economics of the new wagon are based on increased payload. Nine aluminium wagons can do the same work as ten existing wagons. In addition to a reduction in first costs, the elimination of one wagon in ten produces lower operating costs, a reduction in routine maintenance of wheels, axles, brakes, and so on, as well as improved productivity from existing motive power. The prototype wagons will be used in the un-

painted condition and with a few minor exceptions will be suitable for all products now handled in covered hopper wagons. They will, in addition, be suitable for certain special loadings for which protective linings are required in conventional wagons.

### WESTERN AUSTRALIA

#### Diesel Shunting Locomotives

Tenders are now being called for the supply of five diesel-hydraulic shunting locomotives for the Government Railways. These locomotives are required for use in marshalling yards. Three small diesel-mechanical shunting locomotives and 18 larger diesel-electrical shunting and main-line locomotives are now in service.

A requirement of the tender is that the maximum amount of construction is to be carried out in Western Australia. The specifications have been left reasonably open to enable tenderers to supply standard type locomotives. However, an 0-6-0 type locomotive is required with an engine of approximately 350 h.p., with a tractive effort of between 22,000 and 25,000 lb. at start and of 7,000 lb. at 15 m.p.h. Service conditions include a maximum axle load of 13 tons.

#### New Coaling Plant

Work has begun on the foundations for a new mechanical coal handling plant to be erected at the East Perth locomotive depot. The new plant, being built in the Midland Junction workshops, is of all-steel construction and will have a capacity for 125 tons. This is 45 tons more than that of the present timber-built plant, which is 41 years old and will be demolished. The existing receiving hopper and apron conveyor and crusher which are of steel, will be incorporated into the new plant.

Considerable savings in time and wages will result from improved depot working being arranged in conjunction with the new coal handling plant. By

remodelling of tracks, locomotives can be coaled on both incoming and outgoing roads, whereas the previous plant and layout permitted coaling on only outgoing roads. The jib of one of the W.A.G.R. rail cranes has been extended at the Midland Junction Workshops to assist in the erection of the new plant, the overall height of which will be 60 ft. It is expected that the new plant will be completed and in operation within six months. Last year the Government Railways used 281,750 tons of coal in its 325 steam locomotives.

### NEW SOUTH WALES

#### Two-tier Sheep Wagons

Sheep are now being conveyed to market at express train speed in two-tier sheep wagons equipped with roller bearing bogies and drawn by diesel-electric locomotives. The introduction of these wagons by the Government Railways has halved the transit time from outback stations to the sale yards in Sydney. The sheep are delivered in better condition. An initial order for 100 of the new wagons has been delivered to the Railways Department by A. E. Goodwin Limited, which is building them at its St. Marys plant near Sydney.

The wagons, each holding 200 sheep, can be hauled at up to 70 m.p.h., about twice the speed of old style wagons. Sheep trains of the new wagons can travel ahead of express passenger trains and will not need to be diverted to let the expresses pass. A central partition on each deck divides the wagon into four equal compartments. Both upper and lower decks have sloping, stainless-steel underfloors beneath the ribbed wooden flooring of blackbutt timber. These give hygienic conditions for the sheep and protection for the undergear, besides facilitating cleaning. The wagons are 37 ft. long, 9 ft. wide and 12 ft. high.

They weigh 21 tons unladen. With 200 sheep averaging 95 lb., the total weight is 29½ tons.

### SUDAN

#### Railway Development

The Sudan Railways Budget for 1960-61 has provided for estimated revenue of £14,150,000 against expenditure of £12,543,000. The development programme includes the construction of two deep-water quays in Port Sudan, re-organisation of Khartoum Central Station, and purchase of new rolling stock.

### JAPAN

#### Passenger Train Accelerations

The current timetable includes new fast services between Tokyo, Osaka, Hiroshima, and, via the Kammon Tunnel, the island of Kyushu. Four expresses run between Tokyo and Osaka, 344



New design of welded aluminium hopper wagon for Canadian National Railways



miles, in 6 hr. 30 min., and several trains take only a little longer. Between Tokyo and Kagoshima, in Kyushu, the fastest train covers the 935 miles in 22 hr. 50 min. The number of sleeping and refreshment car services has been increased.

## CHINA

### Long Welded Rails

Experimental stretches of long welded rails are being laid in many parts of China. They vary in length from a third to two-thirds of a mile in length and are welded on the aluminium, thermit, arc, and gas welding methods.

### Louti-Shaoyang Branch

A branch has been built from Louti, on the Hunan-Kweichow Railway, to Shaoyang City among high hills. The line is 61 miles long. The Hunan-Kweichow Railway is in South West China and is still under construction.

### Visit of French Technical Mission

It is reported that a technical mission from the French railway industry hopes to leave for China shortly to discuss problems of railway electrification with the Ministry of Railways. Two years ago China placed an order with a consortium of French manufacturers for 25 3,500-h.p.

electric locomotives for operation on the 25-kV. 50-cycle a.c. system.

## SPAIN

### Petrol Railcars Converted

Two old petrol-driven railcars have been converted into a twin-unit. This has been placed in service between Segovia and Medina del Campo. The two units are connected by a flexible gangway, as in a T.A.F. diesel train. The interiors have been entirely re-modelled and the passenger accommodation has been improved, and includes arm-chair seats, additional baggage rack and other space, better lighting, new decor, and modernised fittings in the lavatories. The two cars accommodate 50 passengers. The Chevrolet engines have been re-conditioned.

### Talgo Service Ten Years Old

Talgo trains were first placed in regular service a little over ten years ago, between Madrid and the French frontier at Irun/Hendaye. The management of the R.E.N.F.E. states that they are popular with the travelling public, despite the supplementary fares, and they are profitable in operation. The average seat occupation is 121 out of 139, and the number of passengers conveyed since the summer of 1950 is over 500,000. For

that reason Talgo trains have been introduced on other services, including that between Madrid and Barcelona. Other new Talgo services are under consideration. The train sets used would resemble those now running between Madrid and Hendaye.

## U.S.S.R.

### Extension of Moscow Underground

The route-mileage of the Moscow Underground is to be extended to 86 by 1965, and to 155 by 1975. The maximum running speed is to increase to 56 m.p.h.

## BULGARIA

### Rolling Stock Production

Almost all new rolling stock for the State Railways is stated to have been constructed recently in Bulgaria. It includes 88-seater bogie passenger coaches.

### Electrification Plans

More than 1,200 miles of track are to be electrified by 1970, according to a statement by the State Railways & Harbours Administration. The present standard-gauge route mileage of the system is about 2,000, including approximately 600 miles constructed in the past 15 years.

## Publications Received

*World Railways, 1960.* Edited and compiled by Henry Sampson, London: Sampson Low's "World Railways" Limited, 16, Maddox Street, W.1. 13 in. x 8½ in. 412 pp. Fully illustrated. Price £5 5s.—One of several changes compared with earlier editions is the combining of sections containing descriptions of locomotive and rolling stock manufacturers with the details on the railways in the appropriate countries. The aim is to give quicker reference and a more comprehensive picture of activity and the progress made by railways and the firms which supply them. A new section of 30 pages gives specifications of diesel engines for railway traction. Tabulated data on about 1,500 railways are set out under 32 headings. They show the physical characteristics, numbers and types of motive power and rolling stock units, and operational results. As before, underground railway systems are dealt with in a separate section. The work is well indexed.

*Basic Synchros and Servomechanisms.* Parts 1 and 2. London: The Technical Press Limited, 112, Westbourne Grove, W.2. 9½ in. x 6 in. Illustrated. Paper covers. Price 14s. each part.—The purpose of the two manuals is to describe and illustrate in the simplest way the fundamental characteristics of the two groups of devices. The scope is limited to training technical staff at the operator and maintenance fitter level. The manuals form part of a larger course of training, developed for the U.S. Navy by a New York firm, but the notation and terminology have been amended in accordance

with British usage. Part 1 contains sections on synchros and servomechanisms, with general descriptions of various aspects and characteristics. Part 2 describes details systems of detecting error, controlling systems in d.c. and a.c. equipment, and ways of combating error in servo systems.

*Jaw-Breakers.*—An illustrated catalogue of 27 pages, No. 470, describes crushing machinery for stone (including track ballast) and coal supplied by Hadfields, Limited. Particulars given of the several types include capacities, weights, and dimensions. The catalogue may be obtained from Hadfields, Limited, East Hecla Works, Sheffield, 9.

*Winter Sunshine At Home and Abroad.*—A programme of winter holidays arranged by Thos. Cook & Son Ltd., and Dean & Dawson Limited, includes the French and Italian Rivières; Rome, Southern Italy and Sicily; Morocco; Portugal and Spain; Switzerland, Dalmatia; Greece; and Turkey (Istanbul), besides a wide selection of resorts in Great Britain, Ireland and the Channel Islands. Rail travel is included in many of the itineraries. During a 15-day holiday in Morocco there are day and night journeys on the Moroccan Railways.

*Rolls-Royce Products.*—All the railway traction material built by Rolls-Royce—engines, torque converters, reversing units and final drives—are described and illustrated within one set of covers in the new catalogue *Diesel Power for Railway Traction* just issued by the Railway Traction Department of Rolls-Royce Limited, Whitchurch Road, Shrewsbury. Output

range of the engines is up to 400 b.h.p., and torque-converter input range up to 600 h.p.

*Fibreglass Reinforced Plastics (secs. 1-3).* This is a booklet in three separate sections published by Fibreglass Limited which deals with the development of new materials, moulding techniques, design and fabrication. The properties of the products are described and a list of suppliers is provided. Copies are obtainable from Fibreglass Limited, Ravenhead, St. Helen's, Lancs.

*Metalexicon.* This is the title of an illustrated booklet published by Metalastik Limited which provides a current guide to the full range of Metalastik Limited products. These include chevron and toggle-link axlebox springs, bolster and side bearer suspensions, locomotive and railcar engine mountings, bush and buffer couplings, and other developments in the application of rubber to problems of vibration, shock, misalignment, unlubricated movements and suspension. Copies are obtainable from Metalastik Limited, Evington Valley Road, Leicester.

*Electric Motor Control Equipment for Machine Tools.*—A brochure, Publication No. 1746/1, obtainable from Allen West & Co. Ltd., Brighton, 7, describes and illustrates a wide range of equipment specially constructed by the firm to the requirements of the machine tool industry. Applications include control equipment, separately mounted, cavity mounted, and machine mounted, and control desks, control switches and accessories.

## Accidents on British Railways in 1959

*Fatality rate for train and movement accidents halved and collisions and derailments reduced by one-third since 1946*

**T**HE report for the year 1959 of the Chief Inspecting Officer of Railways, Brigadier C. A. Langley, shows that only one passenger was killed in train accidents on British Railways last year. This was the result of an open-door collision at Liverpool Street, Eastern Region, and compares with 18 in 1958 and 92 in 1957. Thirty-four passengers were killed in movement accidents attributed mainly to misadventure and carelessness when entering and leaving trains in motion, falling off platforms and out of coaches and opening and closing carriage doors.

### Accident Trends

Reviewing progress since the war, the report includes for the first time a series of graphs showing accident trends since 1946. The graph reproduced on page 420, gives the total fatalities in the working of the railways year by year since the war, and that on page 419 shows how passenger fatalities in train accidents are largely fortuitous. For example, during the year a crowded express travelling at high speed was derailed at Slough, Western Region, but the passengers escaped virtually unhurt. On the other hand, the accidents at Harrow, London Midland Region, in 1952, and at St. John's, Lewisham, Southern Region, in 1957, resulted in two of the worst disasters in railway history and accounted for nearly 40 per cent of the total passenger fatalities since the war.

Since 1946 the fatality rate in train and movement accidents combined has been halved; collisions and derailments have dropped by one-third, as shown in the

graph on page 420; accidents caused by technical defects are not much more than one-half; and failures of rolling stock and permanent way are less than one-quarter of the 1946 numbers.

These improvements are attributed to better maintenance of equipment and to the provision of additional safeguards since 1946 including the extension of the Automatic Warning System, the conversion of distant signals from semaphore to colour light, the provision of track circuits and block controls, and modernisation works in general.

There has been a decline in the number of accidents resulting from the two most serious types of human error, namely, signalman's mistakes and drivers passing signals at danger. By contrast, accidents caused by other human failings have been increasing since the war and last year were 13 per cent greater than the average for the first 10 post-war years.

### Detecting Cracks in Rails

Reference is made in the annual report to the various major accidents, the individual reports on which have been summarised in our columns. Among these were the derailment at Slough, Western Region, on May 1, caused by a broken bull-headed rail which had developed a corrosion fatigue crack. It was concluded that the crack was of slow growth and that it should have been discovered by the ganger when he examined the rail for cracks a few weeks before. It was considered that the present method of detecting cracked rails by visual examination was generally

satisfactory although ultrasonic appliances were now being used in special places such as tunnels and water troughs where rail corrosion was more rapid than elsewhere. In its present state of development the general use of the new equipment was not considered justified as a complete substitution for visual examination.

At Stobswood occupation level crossing, North Eastern Region, on September 15, a crossing keeper opened the gates for a lorry when the up line indicator in his cabin showed "line clear," without getting permission from the signalman. He did this as a down mineral train was clearing the crossing and the lorry was driven out from behind it on to the up line into the path of a fast diesel train. The lorry was flung clear of the line and wrecked and its load of fireclay stove in the front of the leading diesel car on to the driver, killing him and derailing the leading bogie of the diesel rail car. The driver's death resulted from the full shock of the train's impact with a heavy mass being taken by the front of the cab and not by the buffers and underframe. The British Transport Commission has under consideration the strengthening of the fronts of future diesel railcars.

### Interference by Children with Signals

A collision on Smedley Viaduct, near Manchester, London Midland Region, was caused by a wrong indication at a home signal. This was the result of interference by trespassers, probably children, tampering with the equipment, but the signalman was also at fault in

### TRAIN ACCIDENTS: PRIMARY CAUSES

	Total	Collisions	Derailments	Running into obstructions	Fires in trains	Miscellaneous
<b>Human Element:</b>						
Train crews (including guards):						
Passing signals at danger	44	22	11	11	—	—
Other irregularities or want of care:						
Enginemen	223	126	54	37	—	6
Guards	40	26	5	6	—	3
Enginemen and guards	6	—	4	2	—	—
Signalmen:						
Irregular block working	11	8	1	2	—	—
Other irregularities or want of care	40	13	10	12	—	5
Other Staff:						
In traffic departments	107	35	5	50	5	12
In other departments	40	2	7	27	—	4
Train crews and signalmen	29	14	5	9	—	1
Train crews and other staff	42	25	5	10	—	2
Signalmen and other staff	14	3	5	6	—	—
Faulty loading	13	2	7	2	2	—
<b>Total</b>	<b>609</b>	<b>276</b>	<b>119</b>	<b>174</b>	<b>7</b>	<b>33</b>
<b>Technical Defects:</b>						
Engines	21	2	7	1	8	3
Vehicles:						
Drawgear	8	2	5	1	—	—
Other	45	7	31	2	5	—
Defective track	27	—	24	2	—	1
Defective signalling apparatus	7	1	2	4	—	—
Defective structures (other)	5	—	—	—	—	1
<b>Total</b>	<b>113</b>	<b>12</b>	<b>69</b>	<b>14</b>	<b>13</b>	<b>5</b>
<b>Other Causes:</b>						
Snow, landslides, floods	16	—	5	7	—	4
Animals on the line	76	—	—	76	—	—
Responsibility of the public:						
Irregular opening of doors	132	114	—	2	—	16
At level crossings	74	—	—	72	—	2
Other	51	2	2	42	4	1
Miscellaneous	83	14	20	6	38	5
<b>Total</b>	<b>432</b>	<b>130</b>	<b>27</b>	<b>205</b>	<b>42</b>	<b>28</b>
<b>Total</b>	<b>1,154</b>	<b>418</b>	<b>215</b>	<b>393</b>	<b>62</b>	<b>66</b>



accepting the engine without having set the route so that the engine could not collide with the diesel train.

The only passenger fatality during the year was the result of an open door collision between two trains, when an open door on the offside of a train leaving Liverpool Street, Eastern Region, struck a small child on the forehead as he was standing at an open window of an incoming train.

#### Fires in Trains

A series of minor fires in diesel power cars resulting from gearbox failures is stated to be "somewhat disquieting." In each case the cause of the fire was that one engine on a train was running in the opposite direction to the others, unknown to the driver, with the result that the fluid flywheel oil overheated causing the failure of the periphery joint and bellows gland and the escape and ignition of the oil. In most of the cases, as in those of the same kind mentioned in Brigadier Langley's report for 1958, the reverse running of the engine was caused by the breakage of one of the striking forks that actuate the final drive, but in one case (in the Scottish Region) it resulted from a bad electrical connection between two cars which so affected control in the cars in rear of it that reversal of their engines did not take place with that of the others. An attempt is being made to eliminate one cause of the trouble by introducing a stronger design of striking fork and to mitigate its effects by mixing with the fluid flywheel oil a special compound that will make it non-inflammable.

Electrical fires included one at Wickford, Eastern Region. A blockage in the pneumatic controls for the raising

and lowering of the pantographs of a two-set 1,500-V. d.c. electric train approaching Wickford had caused the pantographs of one set to make only intermittent contact with the overhead wire with the result that at times the eight coaches were being driven by only two motors. Consequently the resistance of one motor became very hot and burnt a hole through the heat shield above it, starting a smouldering fire in the coach floor. The protective asbestos prevented any fire in the compartment, but fumes generated when the fire extinguishing fluid came into contact with the hot resistance caused some distress to passengers. Arrangements have been made to improve the fire barrier between the resistances and the coach floors.

#### Accidents to Passengers

The number of passenger fatalities was again well below the average for the last few years and that the compensating increase in injuries in 1958 was not repeated in 1959; the figure for injuries in 1959 was 11 per cent below that for 1958. Since there was also an increase of 1.6 per cent in the estimated total of passenger miles travelled, the year can be regarded as a good one.

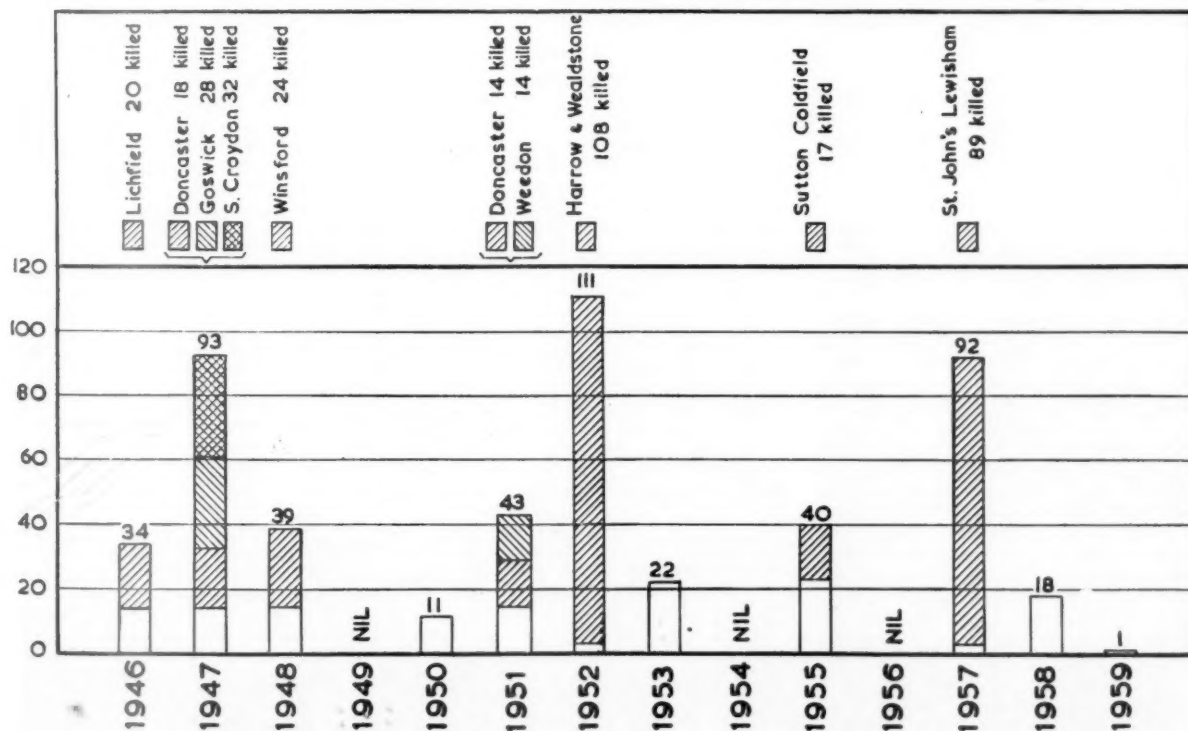
The largest single cause of injury again was the opening and closing of carriage doors; those who open a door prematurely as a train enters a station frequently hurt other people, if they do not hurt themselves as they jump out. One person, however, who tried to alight too early was particularly unlucky: he was a passenger who in dense fog had boarded in error a train that was not scheduled to stop at his station, and when it slowed to less than walking pace

for signals he assumed that it was about to stop at the platform. He had opened the door and was preparing to alight when the signal that was the real reason for the train's slowing was pulled off and, as the train accelerated he was thrown to the track and seriously injured.

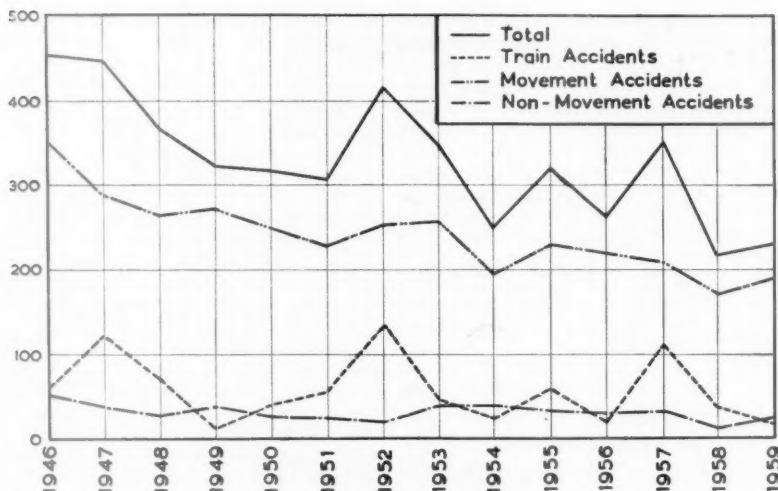
The total number of casualties to railway servants in movement accidents during 1959 was 1,940, which, once again, is the lowest yet recorded, although the 136 fatalities were 19 more than in the previous year. These fatalities were distributed more or less evenly throughout the country but in 1959 there was only one fatal accident in the South Wales industrial area and none at all on the Tees-side between Darlington and the coast. Eight hundred and fifty-six of the injured persons were concerned in shunting accidents but about 77 per cent of these sustained only minor injuries.

#### Shunting Accidents

Casualties by shunting accidents totalled 878, a reduction of 93 as compared with 1958, although the fatalities have increased by 3 to 22. The 10 fatalities due to coupling or uncoupling vehicles were the most unsatisfactory feature. Six of these occurred when coaches fitted with automatic couplers were being attended to; of these six, four were the outcome of remaining between such vehicles during "ease up" movements, or of going between them before making sure that they would remain at rest, and two of them happened when vehicles which had been left behind after uncoupling operations ran away because they had not been properly secured by the hand brake or with scotches. Thoughtlessness on the part of men



Passenger fatalities in train accidents since 1946



Fatalities in operation of British Railways

who were standing or stepping foul of engines or vehicles, often in an endeavour to get into a better position for controlling the shunting movement in hand, resulted in 47 casualties, 7 of which were fatal.

Casualties to staff through being struck by trains while at work on the permanent way, sidings, and so on, resulted in 43 deaths and 27 injuries (total, 70), compared with 34 and 32 in 1958, and the corresponding averages of 55 and 39 for 1951-55. The 70 casualties were the outcome of 63 accidents, all of which were the subject of inquiry. The progressive decline of total casualties was not maintained, there having been four more casualties in 1959 than in the previous year, but the total of 70 casualties compares favourably, nevertheless, with the average of 94 for 1951-55. The proportion of fatalities is higher than usual but this is largely a matter of chance for when a train takes a man by surprise and strikes him it is quite fortuitous whether he is killed or injured as a result.

#### A.C. Electrification Dangers

In view of the extensive overhead electrification schemes which are in hand, special attention has been paid to the accidents caused by electric shock from the overhead traction system. There were two fatalities and four cases of injury to railway servants; of these, five cases were the result of non-movement accidents. The fatalities occurred to a locomotive fireman at Singer, near Glasgow, and to a driver at Colchester; in both cases the men had climbed on to the side tanks of their engines in order to clean the cab look-out windows and inadvertently came into contact with the overhead wire which was energised at 25,000 V. One of the cases of injury was to a fireman who went into the tender to shovel coal forward while his engine stood on a platform line at Lancaster Castle Station; he, too, touched the overhead wire in a moment of forgetfulness, probably by grazing it with his head. Another was to a fitter at Colchester, who, forgetting all about the overhead wires at that place,

as he admitted, climbed up on to the roof of a diesel train to carry out running repairs. Another injury occurred at Reddish, on the outskirts of Manchester, where a fitter who observed men working at the overhead equipment from ladders wrongly assumed that it had been rendered dead; on climbing a ladder himself in order to assist the others he grasped a wire and received a severe shock. The last-mentioned accident was the outcome of not adhering strictly to the regulations, but in the other four cases the men were all doing what was customary and safe on non-electrified lines but what is prohibited anywhere beneath overhead traction equipment—namely, climbing on to tenders or high parts of locomotives and vehicles for purposes connected with their duties.

#### Electrification Warning Notices

To seek means whereby such accidents in electrified areas can be avoided, Brigadier Langley met officers of the Commission towards the end of the year and, as a result, several additional safety measures have been introduced. Small but conspicuous notice plates worded "Danger — overhead live wires" are being fitted in prominent places on all

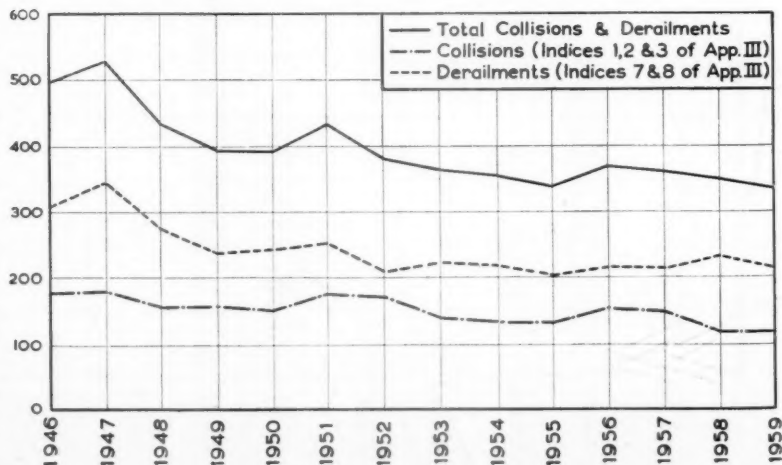
locomotives likely to be worked on electrified lines. Larger notices are being placed at outlets from non-electrified motive power depots and sidings where engines may be standing for some time. Similar notices giving warning to the public are also being erected in conspicuous places in stations and yards to which the public has access. Motive power staff who are more apt than others to overlook the presence of overhead wires are being specially warned about the danger which may arise if they neglect, even momentarily, the safety instructions; the effect of such forgetfulness is being brought home to them by practical demonstrations.

#### Downward Trend in Fatalities

Although the fatalities from all causes rose in 1959 to 231, there has been a general downward trend since the war and the train and movement accident fatality rate per million train miles has been halved in 14 years. This is primarily on account of the substantial reduction in movement accidents, though there has been a setback this year. Train accident fatalities, on the other hand, have fluctuated violently as can be seen by the graph of fatalities, which illustrates the effect on statistics of a single accident, such as St. John's, Lewisham, in 1957, or Harrow, in 1952.

The downward trend in train accidents is also illustrated in the lower graph on this page, which gives the number of passenger and freight train collisions and derailments, the two types which produce the most serious results both in casualties to passengers and destruction of stock. The year's total of 335 is the lowest since the war and nearly 20 per cent lower than the average for 1946-55.

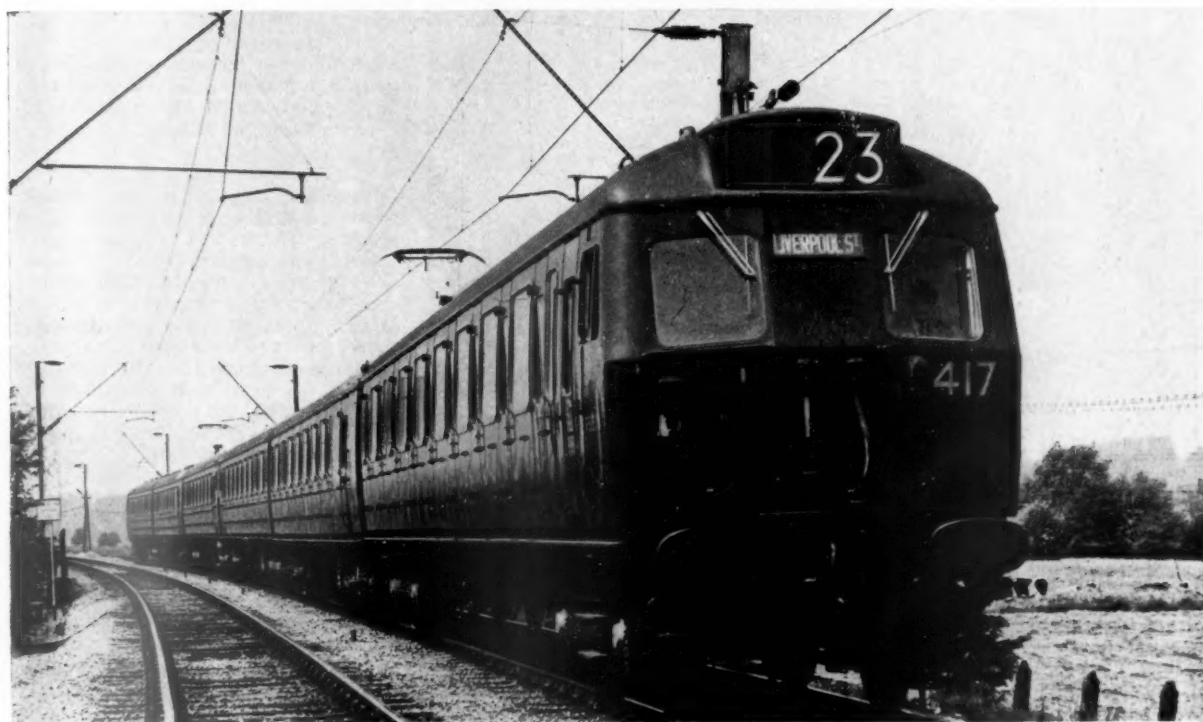
Train accidents caused by drivers passing signals at danger have in the past accounted for a large number of the fatalities and it is therefore desirable to pay particular attention to this type of accident. At the request of the B.T.C. the Medical Research Council is now investigating all such cases of human error. The Council has appointed a committee on the human factor in railway accidents which had its first meeting in December, 1959.



Passenger and goods train collisions and derailments

## British Railways A.C. Multiple-unit Stock

*Three- and four-car trains for the Liverpool Street, Enfield Town, Chingford, Hertford East, and Bishops Stortford lines in the Eastern Region*



*Multiple-unit six-car train on trial run between Rye House and Hertford East*

**T**HE electrification of British Railways Eastern Region suburban lines from Liverpool Street to Enfield Town, Chingford, Hertford East, and Bishops Stortford has reached the point where it is expected to have a total of 71 trains operating by the end of the year. These multiple-unit trains have been built by the British Railways Carriage & Wagon Works at Doncaster and York and are fitted with electrical equipment supplied by the General Electric Co. Ltd. The trains will be either of the three-car or four-car type depending on their duty.

The three-car trains, of which there will be 52, will operate on the Liverpool Street to Enfield Town and Chingford lines with a schedule speed of 22 m.p.h. The remaining 19 trains will be four-car units and will run from Liverpool Street to Hertford East and Bishops Stortford with a schedule speed of 34 m.p.h.

The three-car units, which have been built at York, comprise a battery driving trailer, a motor coach and a driving trailer, and have second class saloon accommodation only. Each trailer seats 94 passengers and the motor coach seats 84, making a total train capacity of 272 seats.

The four-car units, which were built at Doncaster comprise a battery driving trailer saloon and compartment, a motor coach, a trailer coach and a driving trailer. Second class seating capacities

of 80, 96, 60 and 108 respectively give a train capacity of 344 seats with an additional 19 first class seats in the trailer coach. Toilets are provided for the first and second class sections of the trailer coach and for the battery driving trailer saloon.

The main characteristics of the stock are as follow:—

	Three-car unit	Four-car unit
Overall length ...	199 ft. 6 in.	265 ft. 8½ in.
Tare weights ...	tons	tons
Battery driving trailer ...	34.1	35.9
Motor coach ...	54.2	54.9
Trailer coach ...	—	31
Driving trailer ...	30.8	32.2
Complete train ...	119.1	154
Acceleration on level tangent track (laden)—		
nominal line volts ...	1.38 m.p.h./s	1.1 m.p.h./s
Maximum service speed ...	75 m.p.h.	—
Vehicle length over body ...	63 ft. 6½ in.	—
Width over body sides ...	9 ft.	—
Height to roof panels ...	12 ft. 4½ in.	—
Bogie centres ...	46 ft. 6 in.	—
Bogie wheelbase motor coach ...	8 ft. 9 in.	—
Bogie wheelbase trailer coach ...	8 ft. 6 in.	—

### Power Equipment

Current is collected from the overhead line at either 25 kV. or 6.25 kV. by a Stone-Feaveley pantograph mounted on the roof of the motor coach on a well section over the guard's compartment to keep within gauge. It is fed through a Brown Boveri air-blast circuit breaker also roof mounted, to a supply changeover switch and from there to the main transformer. Specially-designed voltage-selection equipment, fed from a capacitor-type voltage divider mounted

on the car roof ensures that the transformer connections are correctly made to accept the voltage available on the overhead line before the air-blast circuit breaker is closed.

The primary of the transformer comprises four equal sections connected in series for operation on 25 kV. and in parallel for operation on 6.25 kV. under the control of the cam-operated oil-filled supply changeover switch. The transformer is oil-cooled by forced circulation through a fan-cooled radiator.

A cam-operated tap changer on the secondary of the transformer permits voltage control of the traction motors. Rectification is by type "C7" Com-Pak mercury-arc rectifiers. These rectifiers which are relatively small for their output, are liquid-cooled, the coolant being pumped through a fan-cooled radiator. The traction motors are connected in series-parallel pairs, each pair being fed by four bridge-connected rectifiers.

### Auxiliary Equipment

An auxiliary supply is provided from a 240-V. tertiary winding on the main transformer. This supplies the train heating system, and also feeds a Westinghouse charger unit. This charger unit is arranged to give a stabilised 110-V. d.c. supply for battery charging and coach lighting, and a 240-V. d.c. supply for the main air compressor. The compressor





*Side view of coach, showing underframe mounting of the rectifier case*

is a Westinghouse type "CM38" unit, underframe mounted with integral motor.

The current for the control circuits, and the cab and indicator lights, and so on, are supplied from the battery. This also feeds an auxiliary air compressor (Reavell type "TBC5" with integral motor), used to provide air to raise the pantograph and close the air-blast circuit breaker, when preparing trains for service.

Cooling fans and pumps are driven by single-phase capacitor start and run type induction motors operating from the 240-V. a.c. supply.

#### **Traction Motors**

The four nose-suspended axle-hung traction motors, type "W.T.380" are of generally conventional design with special features to enable them to operate satisfactorily with the pulsating character of the rectified supply. Current for each pair of motors is passed through a smoothing choke and a permanent divert is connected across the fields. The motors, which are Class "B" insulated throughout, drive through single spur-reduction gearing having a ratio of 17/65. The continuous rating of each machine on weak field is 240 A. 1,475 r.p.m. 200 h.p. at 687 V.

The pantograph, circuit breaker, and earthing switch, and the capacitor divider are roof mounted, and the m.v. control equipment, and auxiliary compressor are located in the guard's compartment. The remainder of the power equipment (except that in the driver's cab) is under-car mounted below floor level, mainly on the motor coach.

The main transformer is placed between the inner longitudinals in the centre of the underframe. One side of the underframe carries the tap-change case, the rectifier case (incorporating its own radiator), the line-switch case, the tapping resistance, and one of the oil-cooled

motor smoothing chokes. The other side of the underframe carries the supply changeover switch, the rectifier ignition case, the reverser and cam group case, the weak field resistance, the other motor smoothing choke, and an oil-cooled tapping choke.

Power for the circuit-breaker is fed to the underframe by a special h.v. cable terminating in a sealing box on the supply changeover switch. The battery and charger unit, and the main compressor, are mounted on the underframe of the battery driving trailer.

The master controller, of very compact dimensions, is of the cam-operated butt-contact type, with a rocking dead-

man's handle and the usual reverse drum interlocking. There are four operating positions, namely shunting, half-power, full-power, and weak field. Automatic acceleration under current limit control is provided.

Multiple operation of trains up to three units can be obtained. The units are also designed to operate in multiple with similar units equipped by other contractors. Train line control circuits are carried throughout the length of the train by 36-point butt-contact couplers between the coaches.

#### **Coach Heating**

Tubular type electric heaters under the passenger seats are used for heating the coaches. Thermostatic control is provided for the passengers, overall control being exercised by the guard. The heaters, each with a maximum rating of 625 W. at 265 V. are supplied from the main transformer tertiary winding.

Lighting is supplied at 110 V. d.c. from the battery charger unit. On the four-car units for the Bishops Stortford and Hertford East lines, incandescent lamps are used throughout, but on the three-car units for the Enfield and Chingford lines the passenger lighting is by fluorescent tubes fed by transistor inverters, each inverter supplying four 4-ft. 40-W. tubes.

#### **Construction of Coaches**

The design and layout of the drivers' cabs are in accordance with the standards established by the British Transport Commission for all the new a.c. stock. The driver has the master controller on his right and the brake controller on his left, with the instruments, control push-buttons, and lighting switches in front of him. The handbrake wheel is on the off side of the cab, in front of the assistant driver's seat. Access to the cab is through a sliding door from the cross



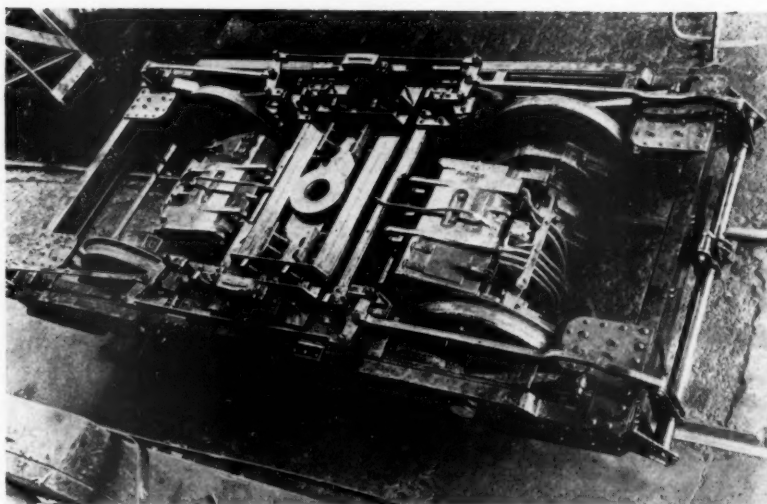
*Interior of three-car train, showing arrangement of fluorescent lighting*

vestibule, immediately behind. Bodies are of welded-steel construction and sprayed asbestos is used for sound and heat insulation.

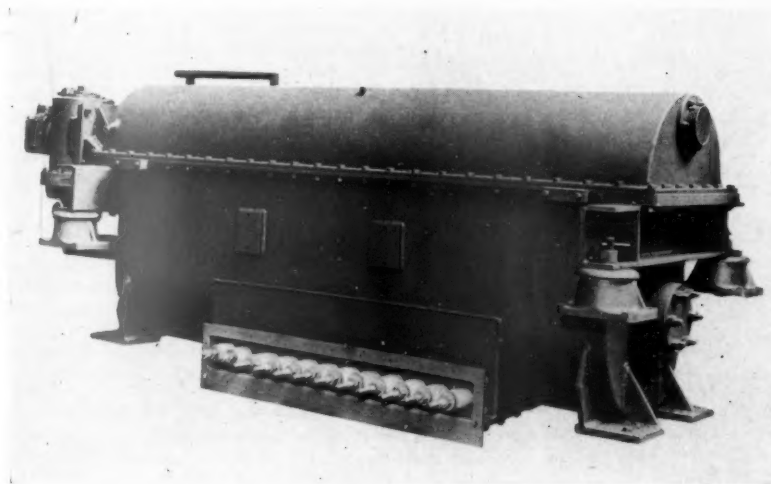
In saloons of the Bishops Stortford and Hertford East stock, the passenger seats are arranged back-to-back across the coach, with three seats on one side of the gangway and two on the other.

The seating for the Enfield and Chingford stock is arranged generally as for the Bishops Stortford and Hertford East stock but the third seat adjacent to the gangway on one side is made separate from the other two. Also on this stock, the windows extend the full width of the panels between adjacent body side doors.

The underframe of British Railways standard design is a welded structure fabricated from rolled-steel sections. The main runs of cable are carried in a duct in the centre of the underframe just below the floor. Automatic coupling and vestibule-type buffers are fitted between the coaches of the units, while



*Bogie with motors assembled*



*Oil-cooled 1,000 kVA. transformer*

the outer ends have telescopic side buffers and drophead couplings.

#### **Bogies and Brake Gear**

Bogies are of the compound bolster type with knife-edge suspension, the principal members being assembled by riveting. Motor bogies are constructed from steel plates and mild steel sections while the trailer bogies incorporate steel pressings for the main members.

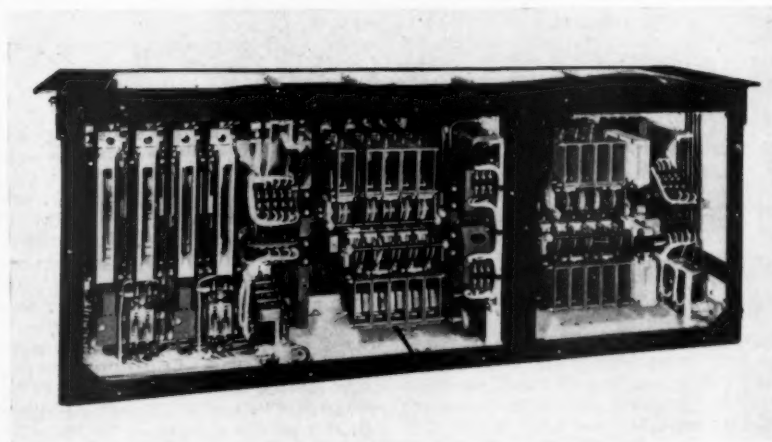
Westinghouse electro-pneumatically controlled self-lapping air brakes are fitted, the brakes on each coach being operated by a single cylinder through equalised and compensated rigging. All cylinders have an 8 in. stroke, the diameter for the motor coaches and battery driving trailers being 16 in. and for the other trailers 12 in. Handbrakes in each cab operate on the wheels of the adjoining bogie through the power-brake rigging.

The design and drawing office work for both types of stock was carried out to British Transport Commission requirements at Doncaster, under the general direction of Mr. S. B. Warder

and Mr. J. F. Harrison, Chief Electrical Engineer and Chief Mechanical Engineer respectively of the British Railways Central Staff.

The principal sub-contractors are as follow:—

Axleboxes	...	British Timken, Division of the Timken Roller Bearing Company, Skefko Ball Bearing Co. Ltd.
Wheels and axles	...	Owen & Dyson Limited, Baker & Bessemer Ltd., Taylor Bros. & Co. Ltd.
Bolster springs	...	Turton Brothers & Matthews Limited
Drophead coupler	...	G. Blair & Co. Ltd., A. G. Wilde & Co. Ltd.
Solid shank coupler	...	English Steel Corporation Limited
Passenger-door drop-lights and cab-side droplight	...	Beckett Laycock & Watkinson Limited
Bodyside windows	...	Pilkington Bros. Ltd.
Driving windows	...	Hallam, Sleight & Cheston Limited
Passenger doors	...	Deans & Sons Ltd.
Route indicators	...	Laycock Engineering Co. Ltd.
Destination indicators	...	Deans & Sons Ltd.
Windscreen wipers	...	Trico Folberth Limited
Telephones	...	Clifford & Snell Limited
Electro-pneumatic brake equipment	...	Westinghouse Brake & Signal Co. Ltd.
Electric lighting fittings	...	J. Stone & Co. (Deptford) Ltd.
Battery	...	Nife Batteries Limited
Radiator	...	Serck Radiators Limited
Capacitors	...	British Insulated Cables Ltd.
Control and heating	...	General Electric Co. Ltd.
Jumper connections	...	English Electric Co. Ltd.
Pantograph	...	J. Stone & Co. (Deptford) Ltd.
Air-blast circuit breaker	...	Brown Boveri & Co. Ltd.
Rectifier and battery charger	...	Westinghouse Brake & Signal Co. Ltd.
Divert resistances	...	Expanded Metal Co. Ltd.



*Cam-operated tap changer*



*Side view of coach, showing underframe mounting of the rectifier case*

is a Westinghouse type "CM38" unit, underframe mounted with integral motor.

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Multiple operation of trains up to three units can be obtained. The units are also designed to operate in multiple with similar units equipped by other contractors. Train line control circuits are carried throughout the length of the train by 36-point butt-contact couplers between the coaches.

#### **Coach Heating**

Tubular type electric heaters under the passenger seats are used for heating the coaches. Thermostatic control is provided for the passengers, overall control being exercised by the guard. The heaters, each with a maximum rating of 625 W. at 265 V. are supplied from the main transformer tertiary winding.

Lighting is supplied at 110 V. d.c. from the battery charger unit. On the four-car units for the Bishops Stortford and Hertford East lines, incandescent lamps are used throughout, but on the three-car units for the Enfield and Chingford lines the passenger lighting is by fluorescent tubes fed by transistor inverters, each inverter supplying four 4-ft. 40-W. tubes.

#### **Construction of Coaches**

The design and layout of the drivers' cabs are in accordance with the standards established by the British Transport Commission for all the new a.c. stock. The driver has the master controller on his right and the brake controller on his left, with the instruments, control push-buttons, and lighting switches in front of him. The handbrake wheel is on the off side of the cab, in front of the assistant driver's seat. Access to the cab is through a sliding door from the cross



*Interior of three-car train, showing arrangement of fluorescent lighting*

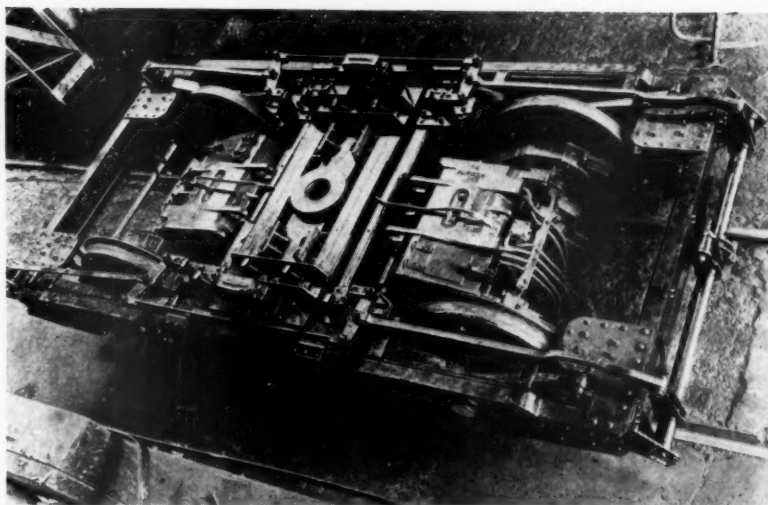


vestibule, immediately behind. Bodies are of welded-steel construction and sprayed asbestos is used for sound and heat insulation.

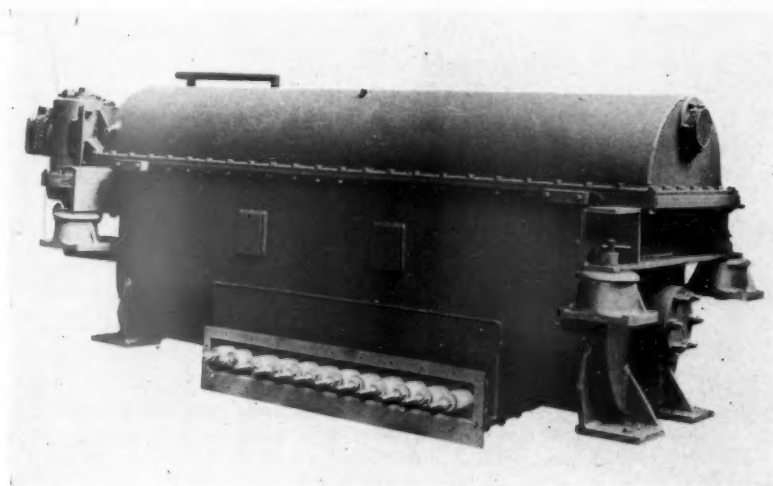
In saloons of the Bishops Stortford and Hertford East stock, the passenger seats are arranged back-to-back across the coach, with three seats on one side of the gangway and two on the other.

The seating for the Enfield and Chingford stock is arranged generally as for the Bishops Stortford and Hertford East stock but the third seat adjacent to the gangway on one side is made separate from the other two. Also on this stock, the windows extend the full width of the panels between adjacent body side doors.

The underframe of British Railways standard design is a welded structure fabricated from rolled-steel sections. The main runs of cable are carried in a duct in the centre of the underframe just below the floor. Automatic coupling and vestibule-type buffers are fitted between the coaches of the units, while



*Bogie with motors assembled*



*Oil-cooled 1,000 kVA. transformer*

the outer ends have telescopic side buffers and drophead couplings.

#### **Bogies and Brake Gear**

Bogies are of the compound bolster type with knife-edge suspension, the principal members being assembled by riveting. Motor bogies are constructed from steel plates and mild steel sections while the trailer bogies incorporate steel pressings for the main members.

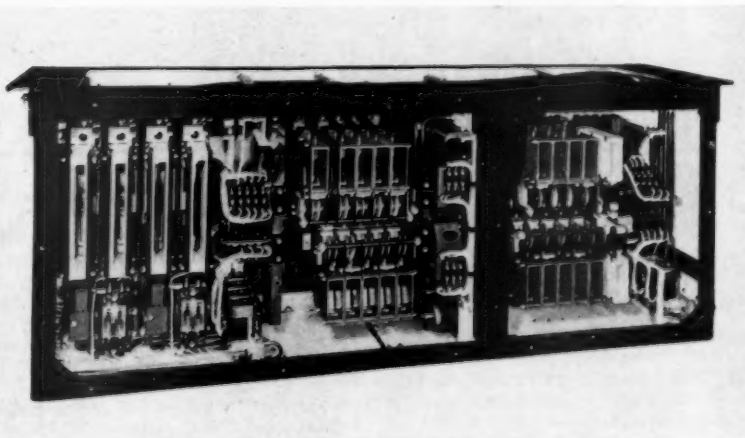
Westinghouse electro-pneumatically controlled self-lapping air brakes are fitted, the brakes on each coach being operated by a single cylinder through equalised and compensated rigging. All cylinders have an 8 in. stroke, the diameter for the motor coaches and battery driving trailers being 16 in. and for the other trailers 12 in. Handbrakes in each cab operate on the wheels of the adjoining bogie through the power-brake rigging.

The design and drawing office work for both types of stock was carried out to British Transport Commission requirements at Doncaster, under the general direction of Mr. S. B. Warder

and Mr. J. F. Harrison, Chief Electrical Engineer and Chief Mechanical Engineer respectively of the British Railways Central Staff.

The principal sub-contractors are as follow:—

Axleboxes	...	British Timken, Division of the Timken Roller Bearing Company, Skefko Ball Bearing Co. Ltd.
Wheels and axles	...	Owen & Dyson Limited, Baker, & Bessemer Ltd., Taylor Bros. & Co. Ltd.
Bolster springs	...	Turton Brothers & Matthews Limited
Drophead coupler	...	G. Blair & Co. Ltd., A. G. Wilde & Co. Ltd.
Solid shank coupler	...	English Steel Corporation Limited
Passenger-door drop-lights and cab-side droplight	...	Beckett Laycock & Watkinson Limited
Bodyside windows	...	Pilkington Bros. Ltd.
Driving windows	...	Hallam, Sleight & Cheston Limited
Passenger doors	...	Deans & Sons Ltd.
Route indicators	...	Laycock Engineering Co. Ltd.
Destination indicators	...	Deans & Sons Ltd.
Windscreens wipers	...	Trico Folberth Limited
Telephones	...	Clifford & Snell Limited
Electro-pneumatic brake equipment	...	Westinghouse Brake & Signal Co. Ltd.
Electric lighting fittings	...	J. Stone & Co. (Deptford) Ltd.
Battery	...	Nife Batteries Limited
Radiator	...	Serck Radiators Limited
Capacitors	...	British Insulated Cables Limited
Control and heating	...	General Electric Co. Ltd., English Electric Co. Ltd.
Jumper connections	...	J. Stone & Co. (Deptford) Ltd.
Pantograph	...	J. Stone & Co. (Deptford) Ltd.
Air-blast circuit breaker	...	Brown Boveri & Co. Ltd.
Rectifier and battery charger	...	Westinghouse Brake & Signal Co. Ltd.
Divert resistances	...	Expanded Metal Co. Ltd.



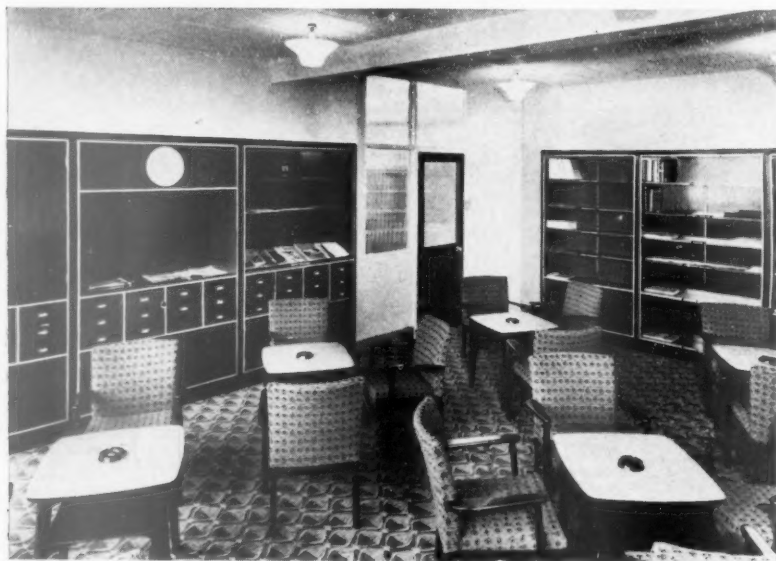
*Cam-operated tap changer*

## Staff and Modernisation in the North Eastern Region

*The avoidance of redundancy while streamlining operations presents special problems to a management determined to improve working conditions*

By S. J. Judson,

*Regional Establishment & Staff Officer, British Railways, North Eastern Region*



*A room in the British Railways work-study school at Harrogate, North Eastern Region, where over 1,000 students have completed courses*

THE report of the British Transport Commission on the reappraisal of the Modernisation Plan contained the following statement:—

"In this and in all things, the co-operation of the staff is essential to the success of the enterprise. Modernisation and rationalisation inevitably imply a contraction of the staff. Every possible care will be taken to mitigate the hardship which this might cause. The objective is a modern, progressive undertaking, with a smaller staff, proud of their industry and better paid."

The North Eastern Region was well equipped to carry out this objective, for it could point to a long tradition of readiness on the part of management and staff to meet and submit their problems to discussion and negotiation.

This tradition was well tested in the postwar period before the modernisation plan was announced, a period which brought many difficult problems for management and staff alike in all regions.

### Staff Totalled 75,000

Two years after nationalisation, when the six Regions of British Railways were re-formed, the North Eastern Region absorbed the West Riding of Yorkshire. This meant the addition of some 15,000 staff from the London Midland and 4,000 from the Eastern Region to its own staff of 56,000, making the total 75,000. A process of welding these numbers into one co-ordinated whole, answerable

to headquarters at York, had to begin.

The immediate need was to carry through the adjustment of staff to numbers more in keeping with peacetime conditions, and the 75,000 were reduced to 67,000 by 1955, and to 60,000 at the present time.

New arrangements for regional negotiation had to be set up and very substantial schemes of management reorganisation tackled. The traffic organisation was still entirely departmental (operating, commercial, and motive power) and the new West Riding territory, so far as the operating and motive power departments were concerned, functioned until 1954 on the "penetrating lines" system with departmental control from Euston and Liverpool Street.

### Improved Conditions of Service

Important agreements governing improvements in conditions of service were made; pensions and sick pay for wages staff agreed; the principle of equal pay for women was adopted; weekly working hours were reduced; additional Bank Holidays given; extra pay for working on Saturday afternoons agreed, and, for recreation, British Railways Staff Association launched. At the same time, each year from 1950 to 1958, there were increases in wage and salary rates. The Court of Inquiry (1955) produced the phrase that "Having willed the end the nation must will the means."

With all the changes of the times, new conditions, competition for labour, and

postwar unrest, there has been only one sizeable strike in the railway industry—a tribute to the good sense of all involved with the machinery for negotiation.

This was the period which saw the emergence of the consultation procedure first agreed with the trades unions in 1949 and given its present form in 1956. Its purpose is to provide contact between management and staff at all levels so that matters of common interest can be discussed in an atmosphere different from that of negotiation. Sustained effort has broken down early suspicion and rigidity and "consultation" is now accepted everywhere. By 1954, staff-management relations were on a new footing.

The whole outlook changed as capital for the Modernisation Plan became available; this was the opportunity, so long denied, to restore a right sense of pride and prestige among railwaymen and women.

In the initial stages of the North Eastern Region's plan, two points quickly became evident:

i. There would have to be a build-up of staff—particularly technical and traffic planning—to work out and give effect to details.

ii. Careful planning would be necessary to avoid the bogey of redundancy.

### Civil and Signal Engineering

It was expected that shortage of technical staff would first strike the civil engineering and signal engineering departments, and schemes were prepared showing future staff and accommodation requirements.

Although new drawing and administrative offices were built and specialised technical staff recruited, ready-made technicians were not easily found. The Region therefore embarked on a system of planned training on as substantial a scale as resources would allow. Intake to the graduate engineers' scheme was stepped up and training intensified, and many more young men were recruited into the student engineers' scheme.

The problem of signal engineering recruitment was much the same but the sources of supply more restricted. With a heavy programme ahead for the provision of modern signalboxes and extensive schemes of telecommunications, the need was for more design staff, skilled craftsmen and installers/linemen. Here again, additional accommodation had to be built and the intake of school-leavers to the student signal engineering scheme stepped up. These young men are being trained through the Region's own resources and through technical colleges and sandwich courses. Before long, there will be a steady stream of qualified men to keep the department self-support-

ing. In the workshops, the work has been reorganised, productivity improved, and accommodation increased. On the installer/lineman side, there has been marked success with the probationer scheme which aims at making the department self-supporting.

The build-up of technical staff was complicated when, in 1957, it was decided to have a separate mechanical engineering organisation for each Region. There followed the difficult process of fitting in the former joint staff to posts in the separate Eastern and North Eastern organisations. That work now is complete and the headquarters staff is installed in a new office building in York. Demands on the technical staff are still growing, and recruitment into training schemes on this account also has been increased.

### Traffic Management

In 1957, it was decided to bring about a measure of co-ordination and decentralisation, and the work of the three traffic departments was brought together at headquarters under a Chief Traffic Manager (later re-designated Assistant General Manager (Traffic)). At the same time, four Traffic Managers were appointed to bring together the working of the commercial, operating, and motive power district officers in their respective territories. All are served from headquarters by a planning section reporting direct to the Assistant General Manager (Traffic).

In the motive power field, altered traffic working made redundant the motive power depots at Selby and Starbeck, involving a reduction of 274 and 204 staff respectively—all were found other railway jobs. Another major staff adjustment arose from the development of the Region's diesel motive power; already some 400 shunting turns, 350 diesel multiple-unit turns and 18 diesel locomotive main-line turns are single-manned. This reduced the number of men by over 750, plus a substantial number of drivers formerly employed on preparation and stabling.

The effect of the 1958 trade recession was particularly heavy in this department, but for the 490 staff who thus became redundant, 422 posts were available within the department, while 55 men transferred to other railway posts.

### Alternative Employment Offered

Between 1958 and 1960, the number of motive power staff fell from 13,697 to 11,843, yet it was possible to offer alternative railway employment to every redundant man, and most in fact were accommodated in this way. Some 12 per cent of the redundant men left the service, but everyone has since been offered jobs within easy reach of his original place of work.

Redundancy in other sections of the traffic department was less severe and could be reduced by forward planning. In the Newcastle operating district, for instance, where 37 signalboxes are scheduled for replacement by four power-operated boxes, vacancies which occur are now being advertised on a temporary basis only.

Single shifting of the Hull and Barnsley line in 1958 and closure in 1959 affected large numbers of men, and it was necessary to plan for the overall redundancy to take effect in two stages without prejudice to their seniority entitlement. The result was an outstanding example of co-operation between management and staff because, with very few exceptions (chiefly crossing-keepers), it was possible to offer everyone other railway work.

### Payment by Results

Already some 70 per cent of the permanent way maintenance staff in the civil engineer's department is employed on a payment-by-results basis; by the end of 1960, the figure will be 80 per cent. Staff establishment thereby has been reduced by some 1,000 men and, by pre-planning, this has been accomplished without a single dismissal or even—with few exceptions—the necessity for a man to move to another locality.

Some men in the workshop grades had to be dismissed in the Chief Mechanical & Electrical Engineer's Department because less construction work was available and there was no alternative work at that time, but it since has been possible to offer reinstatement to most of the men.

Abolition of invoicing for freight traffic saved 225 clerical staff and 29 conciliation staff in 1954, and centralisa-

smooth adjustments of staffing bear witness to the close contact which has been built up with staff representatives from sectional councils and local departmental committees, and tribute must be made to the way these bodies have tackled the problems which have presented themselves.

The modernisation plan visualises that conditions of employment for railway staff will be improved in keeping with the new standards generally, and considerable progress in this direction already has been made. Wherever new depots have been built or other improvements made, better facilities for staff have been included; for example, the new diesel depot at Neville Hill (Leeds) includes a messroom, toilets, showers, lockers, and drying room. Numerous offices have been built with a very much higher standard of environment and equipment than was provided previously. Railwaymen can expect to work in much pleasanter conditions in future than they have done up to now.

### Training and Education

An essential feature of modern conditions is that there should be proper recruitment, induction, training facilities, and means by which staff can be equipped in new techniques and standards. The Region's policy is to see that means are available by which everyone who enters



*Wash room at Darlington diesel depot, typical of the improved quarters being provided for staff in the North Eastern Region*

tion of accounts at a small number of main centres has saved a substantial number of posts over the years.

### Agreements with Unions

With this temporary emphasis on staff reductions it was fitting that an important step should be taken to ease the effect on the individual and, in 1957, agreements were made with the unions for redundant men to keep their original rates of pay and to receive special travelling facilities to and from their new places of work.

These and similar agreements and

the service can be equipped for advancement to higher levels of supervision and management.

The provision of classes in railway subjects is a tradition of the Region, and every winter some 700 of the staff enrol for evening instruction in train signalling, passenger and goods station work, and so on, and some 250 for correspondence courses. The Region takes its full share in vocational courses organised by the British Transport Commission at its schools at Derby, Darlington, Watford, Woking, and Dillington House, and



supplements these by local centres organised wholly for its own staff. Workshop and footplate staff changing over from steam to diesel also are trained in the Region.

In the traffic department, winter residential courses are organised for station and enquiry clerks. A scheme to give training in signalling techniques has been introduced to produce key operating staff familiar with modern signalling and telecommunications. Recruits and men from the Region's own staff are given training as shunters, signalmen, and motor drivers.

In the mechanical & electrical engineering department, new and improved pre-apprentice training schools are being built at the main centres at York and Darlington where boys will receive theoretical and practical training on which a full career as craftsman, leading to higher technical appointments, can be founded.

#### Work Study

The North Eastern Region lost no time in implementing a plan for the development of work study when this became the Commission's policy in 1956.



*Locker room at Thornaby motive power depot, North Eastern Region, to provide security for personal property of engine crews and shed staff*

The Region attaches considerable importance to plans now being made to give training to stationmasters and supervisors in leadership and public relations, and it is planned to extend the scheme to include all traffic staff.

#### Recruitment for Technical Training

Students in the engineering departments, recruited from boys with "A" level or exceptional "O" level G.C.E. passes in mathematics and physics, undergo a five-year course of training during which they can obtain technical qualifications from full-time attendance at a technical college, sandwich courses, or evening-classes with day release. A similar training, but for boys with "O" level G.C.E., is given in plant maintenance in the Chief Civil Engineer's Department. In the permanent way realm, with the current emphasis on mechanisation and closer control of work, gangers and chargehands are given training over a period of two to four years during which they can qualify as permanent way inspectors and works inspectors.

In the signal engineering department, probationers training to become installers or linemen are given a planned course of training lasting four years, during which they are required to take the City & Guilds course and examination in electrical fitting.

Premises for a school and accommodation for students were found in Harrogate, instructors were appointed and the school equipped, and 10-week training and one-week appreciation courses, designed and prepared with the assistance of the Commission's school at Watford, were in full operation by October, 1957. In July, 1960, the 1,000th student completed his course. The school itself, which has been called a model of its kind, consists of a lecture room, library, room for practical exercises, instructors' rooms, workshop, and administrative offices. These are housed in modern premises furnished in contemporary style and equipped to the high standard implicit in work study itself. The courses have been attended by a number of staff representatives and trade union officers, as well as members of the staff of other Divisions of the Commission. Three evenings in the ten weeks are regularly devoted to management forums, when three or four senior officers form a panel to answer questions from the students on management issues which arise from their studies.

#### Training in Work Study

In the civil engineering department, where an early start has been made in applying work study, young men are being trained as work study engineers over a period of four years, during which

they take the work study course at the Harrogate school, and are given basic engineering training within the department.

The Region believes in the importance of good staff morale and relations with its own staff. Recruitment and training are not enough and everyone should know how he fits into the organisation and the part his contribution makes to the whole.

One recent experiment in internal relations has proved highly successful. The West Riding will be particularly affected by the modernisation plan, and the staff were apprehensive about their future. In April this year, a special meeting was called of over 300 representatives of traffic staff in the area, at which the plan as it affects the West Riding was fully described, and an explanation given by headquarters officers of the way in which the effects of redundancy would be minimised. Questions from staff representatives were answered, and the meeting was followed by informal discussion between staff representatives and railway officers.

#### Staff Information Facilities

Film shows of B.T.C. films have attracted large audiences from railwaymen and their families and a regional newspaper is now distributed to all staff. Recreational activities through the British Railways Staff Association have steadily increased and the membership has risen from 3,000 in 1952 to 21,000 at the present time.

The Welfare organisation generally in the Region has been strengthened, its activities including keeping contact with those who are sick and who require help with personal problems, or need to be fitted into light work posts.

To sum up, the staff story during the past few years has included both redundancies and acute shortages, but modernisation means a bright future for all employed, and on management rests the responsibility for providing a full programme of recruitment, induction, training, promotion, and conditions of employment adequate to the new conception of a worth-while industry. Just as the modernisation plan is changing the whole conception of railway practices, facilities and equipment, so it is necessary for railway staffing and training and leadership to keep pace; in the North Eastern Region, the policy and determination are that they shall do so.

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**DELIVERIES TO GERMAN FEDERAL RAILWAY.**—During the first six months of 1960 the German Federal Railway took delivery of 208 new passenger carriages and 2,648 new freight wagons. Rebuilds were given to 327 passenger vehicles and 3,271 freight wagons.

**VOKES LIMITED AT PUBLIC WORKS EXHIBITION.**—Vokes Limited and its subsidiary companies, Stream-Line Filters Limited and Vokes Genspring Limited, will be showing a selection of filtration and other equipment at the Public Works Exhibition at Olympia, London, W.14, on November 14-19. Exhibits will include filters used in air-conditioning plants and oil filters.

## RAILWAY NEWS SECTION

## PERSONAL

Mr. E. D. Trask, Assistant to the General Manager (Special Duties), British Railways, Eastern Region, retired on September 30.

Mr. M. G. E. Lambert, Divisional Traffic Manager, Liverpool, London Midland Region, who, as recorded in our September 9 issue, has been appointed Line Traffic Manager, Manchester, London Midland Region, began his career with the Shrop-

Mr. D. H. Millership, Head of Section (Salaried Staff), London, Midland Region, has been appointed Assistant (Salaried Staff) Regional Establishment & Staff Office.

Mr. J. Kirkby Thomas, Principal of the British Railways School of the British Railways School of Transport, Derby, has been appointed to special duties in the Department of the Manpower Adviser at the Headquarters of the British Transport Commission.

active service in France. Later he was transferred to the Royal Engineers and posted to Mesopotamia. He joined the Vulcan Foundry in 1919 as Assistant Works Manager, and took over as Works Manager on the retirement of the late Mr. A. J. Lane, in August, 1946.

Mr. J. Royston, A.M.Inst.T., Divisional Traffic Manager, Manchester, London Midland Region, who, as recorded in our September 9 issue, has been appointed Line



*Mr. M. G. E. Lambert*

Appointed Line Traffic Manager, Manchester, London Midland Region



*Mr. J. Royston*

Appointed Line Traffic Manager, Crewe, London Midland Region

shire Union Railway & Canal Company as a junior clerk at Chester in 1914. In 1921, when the canal ceased to act as carriers, Mr. Lambert transferred to the L.N.W.R. He served in various capacities at Euston and at goods and passenger stations in the Northampton district. In 1939 he was appointed to a committee engaged in modernising and mechanising goods terminal operations and became Goods Agent, Gloucester, in 1944. He transferred to Leicester in 1945 as Assistant District Goods & Passenger Manager and to Broad Street in 1948 as Assistant Goods Superintendent (Commercial). He became District Goods Superintendent, Warrington, in 1953, and District Goods Manager, Manchester, in 1956. In November, 1957, he was promoted to be Divisional Traffic Manager, Liverpool.

Mr. K. D. Rhodes, District Engineer, Cardiff, British Railways, Western Region, has been appointed General Assistant (Maintenance & Organisation) in the Chief Civil Engineer's Department, Paddington.

Mr. D. Fenton, Movement Superintendent (Great Eastern), British Railways, Eastern Region, has been appointed Movement Officer (Traffic Headquarters), Liverpool Street, Eastern Region.

Mr. J. G. Dawson has succeeded Mr. V. H. Hopkins as Chairman of Council of the British Internal Combustion Engine Research Association, and Mr. S. J. Wood has been elected Vice-Chairman.

We regret to record the death of Mr. W. H. King, A.M.I.Mech.E., formerly Works Manager of the Vulcan Foundry Limited from 1946 until his retirement in 1952. Mr. King began his apprenticeship in 1904, at the Swindon Works of the Great Western Railway, and subsequently spent some time on the Continent as Inspector of Materials for that railway. In 1913 he went to India, as Assistant Locomotive Superintendent on the N.W. Railway, and returned in 1915 to join H.M. Forces. He was commissioned in the Royal Field Artillery, and saw

Traffic Manager, Crewe, London Midland Region, entered the service of the Great Northern Railway at Retford in 1918. After serving in the District Superintendent's office at Nottingham, he became a Traffic Apprentice in 1927. In 1930 he went to Grimsby Docks as Assistant Yardmaster and, in 1932, to Immingham as Yardmaster. He returned to Grimsby Docks as Yardmaster in 1934. In 1937 Mr. Royston was appointed Chief Signalling Inspector, Superintendent's Office, Western Section, Liverpool Street, from which position he transferred to Manchester in 1940 as Assistant District Superintendent, L.N.E.R., and was appointed District Superintendent in 1945. He returned to Liverpool Street in 1948 as Assistant Operating Superintendent (Western), Eastern Region, and was re-designated Assistant Divisional Operating Superintendent (Western) in 1949. He became Divisional Operating Superintendent, Manchester, London Midland Region, in May, 1954, and was promoted to be Divisional Traffic Manager, Manchester, in September, 1957.

Mr. W. T. James, a member of the board of the British Electric Traction Co. Ltd. is retiring at the end of the year. Mr. F. K. Pointon has been appointed to the executive staff of the company.

Mr. R. L. E. Lawrence, O.B.E., E.R.D., M.Inst.T., Divisional Traffic Manager, London, London Midland Region, who, as recorded in our September 9 issue, has been appointed Line Traffic Manager, Derby, London Midland Region, began his rail career with the L.N.E.R. in 1934. In 1939 he joined H.M. Forces and subsequently became a Colonel in the Royal Engineers. After demobilisation he held various posi-

have been appointed Executive Directors. Sir Ronald Scobie, a Director of the company since 1947, has resigned from the board.

Mr. G. F. D. Spong, Overseas Technical Representative, Expandite Limited, left London on October 4 for a tour of the Middle East.

BTR Industries Limited has announced the following appointments: Mr. J. A. Hardman to be General Manager, Belting Division; Mr. D. J. Hodgson to be Controller of Research; and Mr. L. W. Rodway to be Manager of Market Research & Development.

to 1923, and 1923 to 1927 respectively, whose death was recorded in our September 23 issue, received his technical education at Dublin University, where he took the Engineering Degree, and also that of M.A. In 1893 he became a pupil of the late Mr. E. B. Thornhill, then Chief Engineer of the L.N.W.R., and was subsequently employed on a number of new works on that railway. In 1889 he was appointed a Resident Engineer on the Midland Railway, and was given charge of important new works. In 1903 he became Chief Engineer of the North London Railway, and during the following three years carried out reconstruction works on that line. In 1906, he returned to the L.N.W.R. as



*Mr. R. L. E. Lawrence*  
Appointed Line Traffic Manager, Derby,  
London Midland Region



*The late Mr. E. F. C. Trench*  
Chief Engineer, L.N.W.R. and L.M.S.R.,  
1909-23, 1923-27

tions in the motive power and operating departments, before becoming District Operating Superintendent at Liverpool (Central), L.M.R., in June, 1950. In August, 1951, he transferred to Derby in a similar capacity, and, in April the following year, went to Railway Executive headquarters as Operating Assistant. In February, 1955, he became Assistant (Passenger Services), Chief Operating Superintendent's Office, Euston, and, in February, 1957, Modernisation Assistant, Operating & Commercial. In November, 1957, he was promoted to be Divisional Traffic Manager, London.

Mr. P. G. James has been appointed a Director of Birmingham & Midland Motor Omnibus Co. Ltd. in place of Mr. F. R. Stockdill, who has resigned from the board.

Mr. H. F. Akehurst, Mr. R. M. Fairfield and Mr. W. C. Handley, have been appointed Assistant Managing Directors of British Insulated Callender's Cables Limited, and Mr. E. Bowyer and Mr. C. H. B. Pipkin

We regret to record the death of Mr. G. Archer, President of The Mond Nickel Co. Ltd.

Mr. A. J. Scamp has been appointed a Director of F. Perkins Limited. Mr. G. E. Smith has resigned from the board.

We regret to record the death of Mr. A. E. Tattersall, Assistant Chief Engineer (signals) of the former L.N.E.R.

Mr. J. Boardman has been appointed Deputy Chairman of U.S. Industries Inc. (Great Britain) Ltd.

Mr. A. Hallworth has retired from the General Secretaryship of the Associated Society of Locomotive Engineers & Firemen, and has been succeeded by Mr. W. J. Evans.

The late Mr. E. F. C. Trench, C.B.E., M.Inst.C.E., Chief Engineer of the former London & North Western and London Midland & Scottish Railways from 1909

Assistant Engineer to Mr. Thornhill, on whose retirement he became Chief Engineer in September, 1909. In recognition of war services he received the C.B.E. in 1920. In 1923 he became the first Chief Engineer of the L.M.S.R., and was appointed Consulting Engineer in February, 1927, which position he held until his retirement on March 31, 1930. Mr. Trench was connected with the Institution of Civil Engineers from his student days, and became an Associate Member in 1897 and a full member in 1904. He occupied the presidential chair in 1928 in which year the centenary celebrations were held to commemorate the incorporation of the Institution in 1829. In November, 1929, he attended the World Engineering Congress in Tokyo, where he represented the Institution of Civil Engineers, the Institute of Transport, and the L.M.S. Railway and acted as the leader of the British Delegation. Subsequently, the Emperor of Japan conferred on him the Order of the Sacred Treasure, third class. Editorial reference is made on page 409.



## NEW EQUIPMENT AND PROCESSES

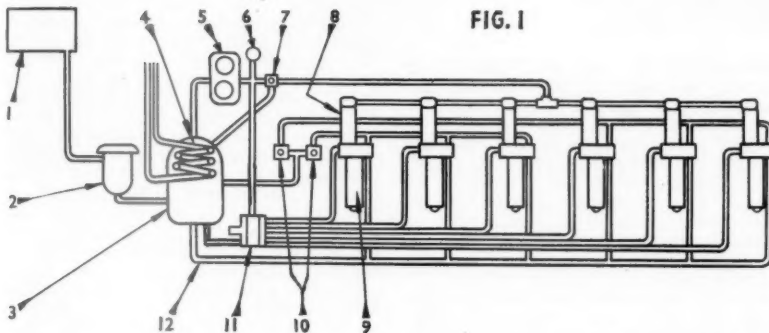


FIG. 1

### Diesel Fuel-Injection System

THE Bicara Mk. I pump-injector system has been developed for use in medium-size and large diesel engines, where, in addition to providing easier control of injection conditions and reducing noise, it offers the possibility of a considerable saving in cost. It is hydraulically operated and has inherently good balance; it is claimed that, when produced to normal fuel-injection standards of manufacture, the pump-injectors themselves will require no adjustment. It may become the successor to some hydraulically actuated but mechanically controlled fuel pumps used in diesel engines for railway traction.

The method of operation is as follows:—

In Fig. 1, oil from the service tank 1 passes via a pipe and filter 2 to a reservoir 3 which may be provided with a cooling coil 4, and thence to the servo pump 5, which increases the pressure to about 1,000 lb. per sq. in. indicated on the gauge 6. This pressure is determined by the setting of the pressure control valve 7 from which oil passes to the accumulators 8 on the tops of the pump injectors 9. Other items shown in Fig. 1 are throttles 10, distributor 11, and leak-off pipe from injectors 12.

In Fig. 2, a servo valve 15 in each pump-injector admits oil to the servo-cylinder 17 at the appropriate time, thus operating the servo piston 18. The servo piston bears on the top of the pump plunger 19 which has a considerably smaller cross-sectional area than the servo piston, and the pressure in the pump chamber is thus equal to the pressure in the servo cylinder multiplied by the ratio of the respective areas, so oil at this pressure is injected into the engine cylinder through nozzle 20.

Later in the cycle the servo valve connects the servo chamber to the throttle and oil at servo pressure enters the pump chamber and returns the plunger and servo piston. The rate of return is controlled by the throttle valve and the setting of this valve determines the length of the return stroke and therefore the output.

The servo valve is operated hydraulically under the control of the distributor. In Fig. 2, a small piston 14, bearing on the end of the valve 15 and working in a cylinder 13 connected by a small-bore pipe to the distributor, acts against a return spring 16 bearing on the other end. By suitable porting in the distributor, the piston is subjected alternately to high and low pressure.

The merits claimed for the system are as follows:—

- (i) A much lower production cost than the conventional system using mechanically operated individual pumps and separate injectors.
- (ii) Ease of control of injection timing and injection pressure.

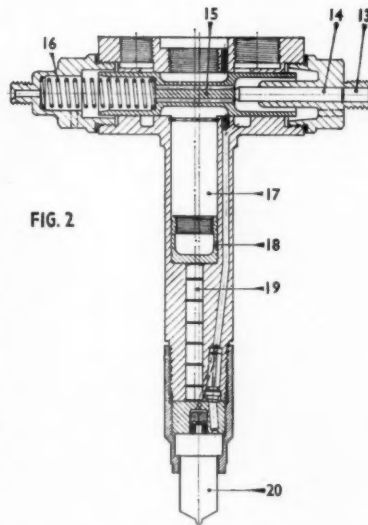


FIG. 2

(iii) Elimination of adjustment of nozzle-release pressures and individual pump outputs.

(iv) Large reduction of noise.

(v) Ease of assembly of units, and ease of fitting complete system to an engine.

(vi) A real saving of space is evident by making unnecessary normal pumps and tappets.

(vii) Good spray formation even at starting and idling because of constant injection pressure.

Further details may be obtained from the British Internal Combustion Engine Research Association, Buckingham Avenue, Slough, Bucks.

### Automatic Tea Dispenser

THE B.A.C. Mk. III fully-automatic tea machine for station platforms and waiting rooms accepts a three-penny piece, or it can be supplied to function on insertion of other double or single coins. It stands 5 ft. 6 in. high and occupies a floor space of only 2 ft. wide and 1 ft. 3 in. deep.

The cup of tea which it provides, with optional milk and sugar, is made by adding mains water at 190–210 deg. F. to a liquid tea concentrate of specially blended leaf tea. Separate one-gal. polythene containers for the tea concentrate, milk, and liquid sugar are held in a refrigerated portion of the cabinet which is serviced by a Kelvinator ½-h.p. sealed unit. Liquid capacity is sufficient for 320 6-oz. or 240 9-oz. drinks. There is an optional cup-dispensing mechanism

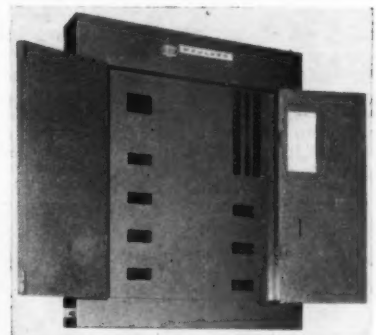
ism with capacity sufficient for 250 6-oz. cups.

Further details may be obtained from the manufacturer, the British Automatic Co. Ltd., 14, Appold Street, London, E.C.2, which will distribute and operate the machines throughout Britain.

### Moulded Circuit-Breakers

A COMPLETE range of moulded circuit-breakers suitable for station lighting and other installations, and based on an American design to give automatic protection against short circuits and overloads without the use of fuses, has been made available in United Kingdom markets. Production in a new factory at Wolverhampton is a joint venture of the Electric Construction Co. Ltd. and the Federal Pacific Electric Company, U.S.A.

In the miniature Stab-lok range covering 5 to 60 A., the breaker mechanism is sealed in a moulded phenolic plastic case measuring 3½ in. x 2⅝ in. x 1 in. The automatic tripping device is non-adjustable and is of the thermal-magnetic type. The thermal bimetal provides normal overcurrent protection while the magnetic trip operates instantaneously at 10 times the rated current. Ambient temperature compensation is provided. Each breaker is individually calibrated during manufacture and sealed to prevent tampering. Silver tungsten fixed and moving contacts are used on the quick-make quick-break trip-free mechanism. Arc extinction is by an arc chute working on the de-ionisation principle.



In a typical distribution panel the required number of breakers are plugged into a vertical busbar contained in a sheet-steel enclosure. Individual breakers may readily be withdrawn and units with alternative current ratings inserted. Any breaker which has cut-out on overload is located immediately by the on-off marking of the switch knob. Breakers for two- and three-pole use on current ratings of 15–100 A. and 70–400 A. are fitted with a rotary switch instead of the Stab-lok toggle switch. This enables a cylinder lock to be fitted. Provision is also made to attach a safety padlock during line maintenance. The thermal overload trip is sealed but provision is made for adjusting the magnetic trip.

The type NM800, which is the largest capacity breaker in the range, has a rating of 800 A. at 600 V. a.c. or 250 V. d.c. This breaker is provided with an interchangeable tripping unit to permit cut-outs having alternative ratings to be fitted.

Further details may be obtained from E.C.C. (Moulded Breakers) Limited, Fordhouse Road Works, Wolverhampton, Staffs.

## British Railways Electrification Conference Opened

*Discussions on technical progress with the 25 kV, 50-cycles a.c. system of electrification*

British Railways' Electrification Conference, which is being attended by representatives of nearly 50 different railway administrations from countries all over the world, opened in London last Monday at the Institution of Civil Engineers. The conference, which ends tomorrow and is concerned with British experience and progress with the alternating current system of railway electrification, was opened by Sir Brian Robertson, Chairman of the British Transport Commission. In the afternoon the Minister of Transport, Mr. Ernest Marples, opened an accompanying exhibition of electric locomotives, passenger stock and electrification equipment, at British Railways Battersea Wharf Depot. Between these events delegates were entertained to lunch by the Commission at the Savoy Hotel, and there was a Government reception at Lancaster House during the evening.

### Exhibition at Battersea

The exhibition at Battersea, which is being organised by the Locomotive & Allied Manufacturers' Association of Great Britain and the British Electrical & Allied Manufacturers' Association in co-operation with the British Transport Commission, covers the whole field of a.c. traction equipment, including power cables, overhead equipment, traction motors, rectifiers, switchgear, pantographs, transformers, signalling and communication equipment, together with an outside exhibit of locomotives, multiple-unit stock, and bogies.

Examples of the five different designs of a.c. locomotive for British Railways are on view. They are all designed for operation in the London-Midland Region. Roof equipment of these Bo-Bo locomotives is standard, each having two Stone-Faiveley pantographs interlocked with a main earthing switch to ensure isolation and earthing of h.t. equipment when necessary. An air-blast circuit breaker is also fitted to the roof.

Connection to the main transformer primary is made through the air-blast circuit breaker, and the primary circuit is completed via axle earthing brushes to the running rail. Voltage selection equipment automatically makes the correct connections for 25-kV. or 6.25-kV. line voltages on the primary side. From the main transformer secondary connection is made through a tap change group to the rectifiers. Tertiary windings provide low tension a.c. supplies for train heating and auxiliary circuits.

Rectifiers are of steel tank, vacuum sealed, single or multi-anode, mercury-arc type, except those fitted to the British Railways-built locomotives which are germanium or silicon semi-conductor assemblies.

The locomotives are fitted with four motors of the series-wound d.c. type, all motors, two in each bogie, being permanently connected in parallel. Final drive to the road wheels is of the resilient type of Brown Boveri or Alstom design. The locomotives are fitted with an independent straight air brake. Controls for vacuum brakes are also included for operations of train brakes and by suitable interconnection through a proportional valve also cause an equivalent air brake application on the locomotive.

The auxiliary machines vary according to the different methods used by the manufacturers, but are principally compressors, battery and battery charger, transformers, oil-circulating pumps, cooling fans, exhausters and traction motor blowers. Pneumatic horns, speedometers and mileometers are also fitted. A.P.C. is fitted to ensure automatic operation of the main circuit breaker when approaching a neutral section, and selection of the appropriate main transformer primary connection, depending on line voltage, after passing through the neutral section.

Power vehicles of multiple-unit train sets for operation on the Glasgow suburban lines and on suburban services in the Eastern

Region are being shown. Also on view is a 2,500-h.p. electric locomotive for operation on the Southern Region third-rail network. Locomotives of this class are used for the haulage of trunk freight trains of up to 1,000 tons as well as passenger trains unsuitable for multiple-unit working, i.e. the "Night Ferry" and "Golden Arrow" and summer relief trains to the Kent Coast resorts. They have four frame-mounted traction motors controlled by a continuously running motor-generator set whose generator excitation is varied by the driver to assist or oppose the passage of current from the line through the traction motors. Either an air-braked or vacuum-braked train can be hauled. As well as having pick-up shoes for current collection from the third rail, the locomotive is equipped with a single pantograph for operation in sidings electrified with an overhead d.c. system. Products of 29 companies manufacturing a.c. electrification equipment for British Railways are also on display.

Over 450 delegates are attending the conference, including some 200 railway managers and engineers from abroad. Among them are representatives from the United States and Russia, African, Asian and South American states, most European countries, and many countries and territories in the British Commonwealth and Empire.

### Works Units

Visits have been made by delegates to the works of some of the manufacturers who are suppliers to British and overseas railways. These visits were supplementary to the exhibition of manufacturers' electrification equipment at Battersea arranged to run concurrently with the conference. There have also been two evening film shows.

The first session of the conference began immediately after the official opening with an inaugural paper by Mr. S. B. Warder, Chief Electrical Engineer, British Transport Commission, entitled "Electrification in the Modernisation of British Railways: the Choice of the 50-cycle System." This was followed by luncheon at the Savoy Hotel. The rest of the day was taken up with the opening of the Battersea Exhibition by the Minister of Transport, and the Government reception in the evening.

The working sessions of the Conference began on Tuesday, when delegates started to discuss more than 40 papers which had been prepared by senior technical staff of both British Railways and British manufacturers. In the morning, the subjects for discussion were the application of the 50-cycle system to railways, and electric locomotives; and, in the afternoon, electric multiple-unit trains, and power supplies for a.c. electrified railway systems.

### Visit to Crewe-Manchester Line

On Wednesday, delegates travelled from Euston by special train to Manchester where they saw the recently-opened electrified line between Manchester and Crewe. From Manchester they travelled by electric multiple-unit train for Crewe, and stopped *en route* to visit the new power-operated signalboxes at Manchester Piccadilly and Wilmslow, and the electrification depot at Crewe.

The presentation of technical papers was concluded yesterday, when the delegates discussed overhead conductor line equipment and its erection, civil engineering, electric traction research, signalling and telecommunications. At the final session in the afternoon, there was a summing-up by Mr. R. C. Bond, Technical Adviser to the British Transport Commission.

Today delegates are leaving Liverpool Street Station in two special trains for an all-day inspection of electrification schemes and associated engineering works completed



Sir Brian Robertson addressing the conference. Mr. S. F. Steward, Director of B.E.A.M.A. is seated on his right; Mr. J. Ratter, Member of the B.T.C., is on his left, and Mr. S. B. Warder is next to Mr. Ratter

or in hand in the Eastern Region. The visit will include the Liverpool Street suburban lines, and the Colchester - Clacton - Walton line, where delegates will see equipment in use for the first time which automatically changes the voltage between 25kV. and 6-25kV., or vice-versa, while the trains are in motion. Included in today's programme will be a visit to the electric train servicing and maintenance depot at Ilford, one of the largest and most modern of its kind in the world, where various types of electric rolling stock and traction equipment in service will also be on display. This evening, delegates are to be entertained at Guildhall in London by the British Electrical & Allied Manufacturers' Association and the Locomotive & Allied Manufacturers' Association of Great Britain. These two trade organisations are, jointly with the British Transport Commission, the sponsors of the entire Conference programme.

### E.I.R. Officers' Dinner

The 57th annual dinner of the East Indian Railway Officers' Association was held at the Connaught Rooms, London, W.C.1, on September 28. Mr. J. D. Michael, formerly Secretary to the Agent, E.I.R., and later to the Indian Railway Board, and General Manager of the Oudh & Tirhut Railway, presided. Mr. Michael, proposing the toast of the "East Indian Railway," reminded his audience of past days on the E.I.R. of the part played by the railway in the development of India, and of the way in which the management had triumphed over disasters such as the Damodar floods in 1943. The British officers of the E.I.R., he pointed out, had trained their Indian successors.

Mr. J. A. Bell introduced the guest of honour, General Sir Rob Lockhart, the last British Commander-in-Chief, India, who had recently re-visited that country.

General Lockhart recalled what the railways had done for India in time of peace and war, not least in manufacturing munitions, arms, and warlike stores in railway workshops. British influence, he had found, still remained, and there was pride in British achievement. One economic and social problem was that of mechanisation without creating unemployment.

Mr. J. A. Bell thanked Mr. R. C. Harvey for his generous and efficient services as Honorary Secretary of the Association.

Those present at the dinner were:

Messrs. J. M. Agabeg, H. J. Allinson, K. O. Bathgate, J. A. Bell, E. P. Blake, G. W. Browne, C. S. Buik, C. N. Burns, D. R. Carmody, R. J. Earle,

Messrs. J. M. Fenton, E. R. Fleeton, J. C. Gibson, J. Grove-White, A. R. Gundry, C. J. Hall,

Sir Hugh Hannay, Messrs. R. C. Harvey, J. R. Hemsley, G. I. Hewitt, J. W. C. Holt, D. H. Hughes, H. Hypher,

Messrs. H. Joscelyne, A. R. Juilts, H. L. Kelly, J. C. Lamb, T. T. Lambe, Sir Robert Marriott, Messrs. F. G. S. Martin, J. D. Michael, D. H. Murray,

Mr. R. S. Oakley, Captain E. M. Padwick, Messrs. J. F. Pegg, J. A. Potts, H. W. Puttick, G. W. N. Rose, E. J. N. Robertson,

Messrs. R. Saunders-Jacobs, H. J. A. Siator, B. G. Smith, H. V. M. Stewart, O. R. Tucker, R. M. Watson, V. G. Wilton, V. Vanderputt,

Guests: Messrs. N. Calder, P. H. S. Drew, R. W. H. Gundry, J. H. Gundry, C. J. Harvey, Colonel N. E. Hendricks, General Sir Rob Lockhart, Colonel D. McMullen, Messrs. J. R. H. Otter, D. A. Phillips, I. Roberts, A. Sykes, and Sir Leonard Wilson.

## New U.I.C. Headquarters in Paris

*Foundation stone laid of building allowing for expansion and increased activity*

The foundation stone of the new headquarters of the International Union of Railways (U.I.C.) in Paris, was laid on September 20, 1960. The ceremony was attended by representatives of Governmental and other bodies, international railway organisations, and many senior railway officers.

Some 200 guests attended the function on the invitation of Professor H. M. Oeftering, Chairman of the U.I.C. and Senior Chairman of the German Federal Railway.

Among those present at the ceremony were:

**Ministries and Governmental Organisations:** Monsieur Jean Cahen-Salvador, Councillor of State, representing Monsieur Robert Buron, French Minister of Transport, who was unable to attend; Monsieur Edouard Dorges, Director of the International Department, French Ministry of Transport; Monsieur Tarantowicz, Under Secretary of State, Polish Ministry of Communications; MM. Vonk, Chairman of the Committee of Deputies, and Mange, Secretary, European Conference of Ministers of Transport; Monsieur Le Vert, Director of Transport Division, Economic Commission for Europe;

**International Railway Organisations:** Monsieur P. Ghilain, Secretary-General, International Railway Congress Association; MM. Jean Tuja, Secretary-General, and P. A. Rousseau, Chief Executive Officer, U.I.C.;

**B.T.C. and British Railways:** Mr. John Ratter, Member of the British Transport Commission and President-elect of the U.I.C.; Mr. H. C. Johnson, General Manager Eastern Region, British Railways; Mr. G. M. Leach, International Traffic Officer, B.T.C., and Chairman of the U.I.C. Passenger Traffic Committee; Mr. C. E. R. Sherrington, Director of Research Information Division, Dr. F. F. C. Curtis, Architect, and Mr. R. H. Hacker, former Chief Continental Officer, B.T.C.; Mr. C. W. Edwards, General Agent for Belgium, British Railways, and former British Liaison Officer at U.I.C. Headquarters in Paris;

**European Railway Administrations:** Mr. E. Aalto, General Manager of the Finnish State

Railways; MM. André Segalat, Chairman of the Board, P. Dargeou, General Manager, and J. Antonini, Secretary - General, French National Railways; Herr Geitmann, Member, German Federal Railway Board; Signor S. Rissone, General Manager, Italian State Railways; Monsieur J. P. Musquar, General Manager, Luxembourg Railways; Mr. J. Lohmann, President, Netherlands Railways; Mr. E. G. J. Upmark, General Manager, Swedish State Railways; Senor J. M. Puig-Batet, General Manager, Spanish National Railways; and Dr. H. Gschwind, President, Swiss Federal Railways;

**Cie. Internationale des Wagons-Lits:** M. André Widhoff, General Manager.

Prof. Oeftering thanked the French Governmental and administrative departments and the S.N.C.F., which had done so much to facilitate construction of the new headquarters. The U.I.C., he stated, was the concrete expression of nearly 100 years of international railway activity. The European Passenger Train Timetable Conference was first held in 1872, and the International Convention concerning the Carriage of Goods by Rail (C.I.M) was first drawn up in 1878. These still existed today, and were more effective than ever. The founders of the U.I.C. had conceived a body with powers to co-ordinate all international and joint activities of the railways under the supervision of its Board of Management.

### Functions and Scope of U.I.C.

The Union, Prof. Oeftering added, consisted of 50 railway administrations in Western and Eastern Europe, and in non-European countries such as Canada, India, and Japan, employing some 4,000,000 people, and dealing with more than 40 international Governmental and non-governmental organisations. It was assisted by eight Committees, an Office for Research & Experiments, a Publicity & Information Centre, a Documentation Bureau and all the "participating" specialised railway organisations; it also received help from the technical or financial companies formed 10 years ago by the railways (Interfrigo, Eurofima). It super-



*Mr. John Ratter, Professor H. M. Oeftering, Monsieur J. Tuja, and Monsieur P. Dargeou with a model of the new U.I.C. headquarters*



vised the operations of executive bodies, such as the "Trans-Europe Express" diesel trains and the Europ Wagon Pool. The U.I.C. dealt not only with general matters, technical, commercial, financial and so on, but also with special problems concerning a limited number of its members; such problems were becoming more numerous. In agreeing that decisions binding on every member could be taken by a suitable majority, and need not be unanimous, the Union had given its members respect for its collective authority.

The Union wished to make an effective contribution towards adapting the railways to the economic structure of the future, and at the same time to retain for them, when they had done so much for the civilisation, the place due to them in a properly co-ordinated system of transport.

Monsieur André Segalat, and Monsieur Jean Cahen-Salvador replied.

Professor Oeffering, accompanied by MM. Segalat, Ratter, Dargeou, and Tuja, and others, over to the special enclosure and then laid the foundation stone. Later, luncheon was taken at the Eiffel Tower Restaurant.

#### New U.I.C. Headquarters Building

The site of the new headquarters is to be built in Rue Jean Rey, on the left bank of the Seine, practically opposite to the Palais de Chaillot and 400 yd. from the Eiffel Tower.

The building will consist of: (1) a ground floor, containing the premises to be used for meetings, with some unoccupied space and a mezzanine; and (2) the upper storeys to be used for offices.

The basement will accommodate cloak-rooms, lavatories, archives, stock rooms, staff dining room, central heating plant, and so on.

The ground floor includes a central hall. To the right on entering will be a large room for meetings or for use as a lecture hall or cinema with seats for 300. To the left will be two rooms for smaller committee meetings; one of these will be used for meetings of the Board of Management. On the mezzanine there will be a delegates' lounge and cafeteria. Access to this will be by an open staircase rising from the centre of the main hall.

#### Office Accommodation

The eight upper storeys, including the mezzanine, may eventually be raised to 10. The second floor will contain the offices of committee chairman and secretaries. The upper floors will be occupied by the staff of the U.I.C. The seventh floor will contain the offices of the Chairman and Secretary-General and their staffs.

Access to the upper floor will be by the central staircase to the storey containing the Chairmen's offices; by an ordinary staircase at the end of each storey and by two lifts serving all floors.

The top floor will be left empty for the time being, to allow for expansion.

The architectural design reflects the various purposes of the different types of accommodation. The entrance and the main hall will have large windows. The offices will stand out as a separate block with a well-defined framework. The bold framework of the façade is designed to allow accommodation to be easily adapted by moving partitions without affecting the window-spacing.

Reinforced concrete is being used for construction, but the main frontage will be faced with stone.

The capital required to erect the new headquarters is being provided by the Belgian National Railways, British Railways, Czechoslovak State Railways, French National Railways, German Federal Railway (Western Germany), German State Railways (Eastern Germany), Italian State Railways, Netherlands Railways, Polish State Railways,

Swedish State Railways, and Swiss Federal Railways. The site is being leased to the Union at a nominal rent by the French National Railways.

The present U.I.C. headquarters are at 10 Rue de Prony, Paris, 17e.

## Staff and Labour Matters

### Railway Shopmen's Wages

A breakdown has occurred in negotiations between the British Transport Commission and the employees' side of the Railway Shopmen's National Council in connection with the rates of pay of railway workshop staff.

In April last the pay of railway workshop staff was increased by 5 per cent with retrospective effect to January 11, 1960. This increase was in line with a 5 per cent interim increase granted to salaried and conciliation staff from January 11, 1960, and which was agreed on February 12, 1960, in talks at the Ministry of Labour after a threat of strike action had been made by the National Union of Railwaymen.

In June, the employees' side of the Shopmen's Council submitted a claim for a further increase, which followed on the settlement agreed for railway salaried and conciliation staff arising out of the Guillebaud Report.

Railway shopmen were not covered by the Guillebaud Inquiry, but in response to the claim, the Commission offered another 3 per cent with effect from July 4, 1960. The increase of 5 per cent from January 11, 1960, represented an increase for the skilled craftsmen of 9s. a week, and the further offer of an increase of 3 per cent meant an additional 6s., making 15s. in total. In an endeavour to reach a settlement the Commission, in discussions with the employees' side, offered to back-date the additional 3 per cent increase to January 11, 1960, the same date as that agreed for the original 5 per cent.

The employees' side, however, compared the position of workshop staff with that of conciliation staff, indicating that in its view there were anomalies which required adjustment before a settlement could be reached. It was accordingly agreed to set up a special joint committee of the Council to examine the representations of the employees' side.

In these discussions at the Special Joint Committee, it became clear that the employees' side was seeking for a further improvement for craftsmen and all but the lowest of the semi-skilled and unskilled grades.

To resolve the position, Sir Brian Robertson, Chairman of the Commission, on September 28 offered to give an additional 2s. with current effect to skilled craftsmen and amounts of 2s. and 1s. 6d. to certain semi-skilled grades. This would have raised the rate of pay of the skilled fitter to 200s. 6d., an increase of 17s. over the pre-January 1960 rates.

### Strike Threat

The employees' side undertook to convey this offer to its respective Executive Committees. Later, the Commission was advised that the offer had been rejected because "it does not concede a satisfactory wage structure as compared with the Railway Pay Review." The unions intimated that they were recommending to the executives of the affiliated unions to instruct their members to withdraw their labour as from October 17, at 12.01 a.m. In the case of the N.U.R., the executive has instructed all members to come out on strike.

On September 30, Sir Brian Robertson

addressed the undermentioned letter to the N.U.R.:

"I acknowledge receipt of your letter of September 29, conveying to me the decision of your Executive Committee to withdraw the labour of all your members from October 17.

"I have, as you know, made strenuous personal efforts to find an amicable solution to this question. I am sorry that my efforts have been rejected, and I deeply regret the action which your Union proposes to take at this critical time in the affairs of British Railways. If your expressed intention is carried out, it will in my opinion do irreparable damage to the industry.

"I contest the propriety of the action of your Executive Committee in calling out men employed in other parts of this organisation, covered by separate wage agreements, and not involved in any dispute. It is my very strong view that, in the interests of British Railways, of British railwaymen, and of our country, this strike should not take place.

"I cannot agree that your Executive had no other alternative open to them, because the established machinery of negotiation has not been exhausted."

A somewhat similar letter was sent to the Joint Secretaries of the employees' side of the Railway Shopmen's National Council.

### Shopmen's Strike Position

Leaders of the Confederation of Shipbuilding & Engineering Unions, meeting at Scarborough on October 3, decided that there should be an immediate approach to the B.T.C. in an attempt to avert the threatened strike. The view was expressed, "that with so little money involved there must be room for compromise."

The full executive of the Confederation has decided to convene a meeting at York on October 13, of the executives of all unions affiliated to the Confederation, to review the whole position.

In the meantime the Chairman and two joint secretaries of the employees' side of the Railway Shopmen's National Council have been asked to approach the Commission with a view to re-opening negotiations.

### L.T.E. Busmen's Wages

Mr. A. B. B. Valentine, Chairman of London Transport Executive, met Mr. Frank Cousins, General Secretary of the Transport & General Workers' Union, last week and discussed the proposal that the Minister of Labour be asked to set up an inquiry into the wages and conditions of employment of London Transport busmen.

Mr. Valentine expressed the view that the better way to settle such problems was by direct negotiation between the Executive and the union, and that this process should be fully used before having recourse to other methods or seeking outside assistance. He also felt that the relevant facts were well known to the parties and that there was no need from that point of view to set up an external inquiry.

It was agreed that the shortage of drivers and conductors was acute, with serious effects on the quality of the services given to the London public; and that to improve the recruitment and retention of staff in London it was desirable that the earnings of the bus crews be increased. The L.T.E. bonus scheme, and certain other changes in conditions, would have substantially improved the earnings of the bus crews. As the representatives of the staff had rejected that scheme, Mr. Valentine suggested that the T.G.W.U. should now make its alternative proposals for improving the earnings of the busmen; negotiations on these between L.T.E. and the union would then take place. London Transport Executive was informed last week that the union intended to follow that course.

## Contracts and Tenders

### Tube stock cars for London Transport Executive

London Transport Executive has placed orders for 619 further 1959 tube stock cars to complete the rolling stock renewal programme for the Central and Piccadilly lines. The orders, which are for car bodies and bogies only, are worth over £4,000,000. Deliveries will start in February, 1962, and will be completed by the end of 1963. Much of the equipment, including motors and traction control equipment, for these cars has been on order since 1959, but further orders remain to be placed.

Of the 619 cars concerned in the present order, 450 are to be built by the Birmingham Railway Carriage & Wagon Co. Ltd., namely, 338 driving motor cars and 112 non-driving motor cars, and 169, all trailer cars, by the Derby Works of British Railways, London Midland Region.

The 589 cars of 1959 tube stock being built by the Metropolitan-Cammell Carriage & Wagon Co. Ltd., of which more than 150 are now running on the Piccadilly and Central lines, should all be in service by mid-1962 and deliveries against the present orders should enable the whole rolling stock replacement programme for both lines to be completed by the end of 1963.

The Birmingham Railway Carriage & Wagon Co. Ltd. built one of the three 1956 stock prototype trains on which the 1959 stock is modelled.

British Railways, North Eastern Region, has placed the following contracts:—

Hendy Angle Limited: partitioning of the diesel shop at North Road Locomotive Works, Darlington

A. Blair Limited: removal of the platforms and station buildings at Blackhall Rocks

The Brighouse Estate Co. (Builders) Ltd.: installation of foundations for hydraulic buffer stops on Nos. 4 and 5 platforms, and for the provision of drainage and water supplies at Bradford Exchange Station

Ruddock & Meighan Limited: site work required in the part reconstruction of bridge No. 7 at Armley Moor, on the Leeds-Bradford line

The Brightside Heating & Engineering Co. Ltd.: provision of a heating installation in the Parcels Office at Newcastle Central Station and in the offices at Irving House, Westgate Road, Newcastle

A. Robinson (Contractors) Limited: drainage of the new marshalling yard at Newport.

British Railways, Scottish Region, has placed the following contracts:—

Jas. Campbell & Son: diesel fuelling & maintenance facilities, Eastfield motive power depot, Glasgow

A. & J. Faill Limited: road repairs, Corstorphine goods yard

Butler Machine Tool Co. Ltd.: two rail planing machines, Kilmarnock permanent way workshops

James Miller & Partners Ltd.: reconstruction of underbridges Nos. 1 & 10, Saughton Road North, Edinburgh

Conveyancer Fork Trucks Limited: two diesel-driven 2-ton fork lift trucks for goods stations in Scotland

Kinnear, Moodie & Co. Ltd.: infilling of arch voids, viaduct No. 104, Kilmarnock

Scottish Machine Tool Corporation Limited: heavy-duty wheel lathe, Townhill wagon repair depot, Dunfermline

The Cementation Co. Ltd.: maintenance work, underbridge No. 214, Golspie

Costain Concrete Co. Ltd.: pre-stressed concrete beams and pre-cast concrete units for 11 underbridges

James Miller & Partners Ltd.: grading of hump areas, Millerhill marshalling yard, Edinburgh.

British Railways, Western Region, has placed the following contracts:—

Henry Williams Limited: setting out, supply and installation of signalling control and train describer panels at Port Talbot, East Usk, Newport West, Maindee Main, Maindee North, Gaer Junction, and Ebbw Junction, Twyford, and Newport East Signalboxes

Burdette & Co. Ltd.: supply, installation, testing, connecting and setting to work of electric lighting facilities at Paignton Station

Jenks Builders Limited: provision of additional accommodation in connection with the fuelling facilities for diesel railcars at Tyseley

J. Rata & Co. Ltd.: renewal of the roof covering and vertical glazing to the lifting shop at running & maintenance depot, Tyseley

Lucas Furnaces Limited: supply and installation of three gas-fired furnaces at "Q" shop, locomotive works, Swindon

The Midland Electric Installation Co. Ltd.: supply, installation, testing, connecting and setting to work of electric lighting facilities, at Oldbury & Langley Green Station

Pelapone Limited: supply, delivery, erection and commissioning of a standby supply generating set and transformer in the signal relay rooms at Reading, Maidenhead, and West Drayton

James Scott & Co. (Electrical Engineers) Ltd.: supply, installation, testing, connecting and setting to work of electric lighting facilities, at Newton Abbot Station and Area

The National Gas & Oil Engine Co. Ltd.: supply, delivery, erection, and commissioning of a standby supply generating set and transformers in the signalbox, Port Talbot

Stone & Co. (Bristol) Ltd.: renovation of the booking hall and enquiry office at Bristol Temple Meads Station

Kyle, Stewart (Contractors) Limited: conversion of the existing running & maintenance depot for diesel locomotives at Bristol Bath Road

Jesshope Limited: supply, delivery, and erection of two portable rail movers at Shrewsbury Hookgate rail welding depot.

Leyland Motors Limited has received an order from South African Railways Road Motor Services for 70 heavy-duty vehicles with 200-h.p. diesel engines. The vehicles comprise 50 trucks capable of carrying 10-ton loads while hauling 10-ton trailers, and 20 buses which will also haul 5-ton trailers.

The Export Services Branch, Board of Trade, has received calls for tenders as follows:—

#### From Spain:

3 railway snow ploughs.

The issuing authority is the Red Nacional de Los Ferrocarriles Espanoles Paseo Del Rey 10, Madrid, to whom bids (in Spanish) should be sent. The tender is No. 152-850-899-028-0247. The closing date is November 4, 1960. Each bid must be accompanied by a guarantee equivalent to 2 per cent of the

value of the item tendered. If bid is accepted, guarantee will be increased to 4 per cent of the bid. Shortest delivery period will receive most favourable consideration. Delivery period commences 60 days from date of opening of bids. The Board of Trade reference is ESB/25575/60/I.C.A.

#### From Pakistan:

10 cylinders C.I. flat topped completely machined including all covers of steam chest liners BTC, SGS, SPS, 20-in. bore to CME's drg. No. E/9722/84

13 cylinders C.I. saddle casting (round) completely machined including all covers and steam chest liners SGC-2 to CME's drg. No. E/11000/89 and 90

6 brackets C.S. motion, BTC, SGC-2, SGS, SPS-1 to CME's drg. No. E/9722/81 fig-A.

The issuing authority is the Chief Controller of Stores, Eastern Bengal Railway, Pahartali, Chittagong, to whom bids should be sent. The tender No. is P6/EAI/BG/18/59. The closing date is October 13, 1960. The Board of Trade reference is ESB/25304/60.

#### From South Africa:

9 12-channel carrier systems

1 three-channel carrier system.

The issuing authority is the Stores Department, South African Railways. Bids in sealed envelopes, endorsed "Tender No. C. 8394: Carrier Equipment" should be addressed to the Chairman of the Tender Board, P.O. Box 7784, Johannesburg. The closing date is October 28, 1960. Local representation is essential. The Board of Trade reference is ESB/25561/60.

Further details relating to the above tenders together with photo-copies of tender documents, unless otherwise stated, can be obtained from the Branch (Laccon House, Theobald's Road, W.C.1).

The Sudan Gezira Board invites tenders for the supply of diesel locomotives, inspection cars, bogie wagons, hand pumps, trolleys, and steel tanks. For further details see the official notice on page 436.

## Notes and News

**Travolator at Bank Station.**—The consulting engineers for the Bank Travolator were Messrs. Mott, Hay & Anderson, and not as printed in error on page 387 of last week's issue.

**Institute of Transport Presidential Address.**—Mr. K. W. C. Grand, President of the Institute of Transport for 1960-61, will make his Presidential Address at the inaugural meeting of the Institute for the 1960-61 session on October 10. The meeting will be held at 66, Portland Place, London, W.1, at 5.45 p.m.

**The Morgan Crucible Co. Ltd. Change of Address.**—On April 1, 1961, the Crucible department of the Morgan Crucible Co. Ltd., will become a wholly-owned subsidiary company. It will be called Morganite Crucible Limited and will operate from Norton, near Worcester. In preparation for this change, the Crucible Sales department and some of the technical staff have been transferred from London to Norton. From October 5, 1960, any communication addressed to the Sales or Technical depart-

ments at Wandsworth, London, should be made to the Morgan Crucible Co. Ltd., Norton Works, Worcester, tel. Worcester 26691, telex 33191. The Demonstration & Test Foundry will remain at Battersea.

#### Four-Day Week at Cummins Engine Co. Ltd.

—A four-day week is to be introduced on October 14 for the 500 workers at the factory of the Cummins Engine Co. Ltd., at Shotts, Lanarkshire.

**Wm. Cory & Sons Ltd. Report.**—At the annual general meeting of Wm. Cory & Sons Ltd., the Chairman, Mr. F. A. Leathers, stated that since 1950 the company had disposed of its colliery interests in South Africa, increased its oil bunkering business, engaged in the distribution of petroleum products in the South and East of England for Shell-Mex & B.P. Limited, and with the British Iron & Steel Corporation Limited, entered into the carriage of iron ore.

**Imperial Chemical Industries Limited.**—During the first six months of 1959 the group net receipts of Imperial Chemical Industries Limited was £27,600,000, compared with £20,023,000 in the corresponding period of 1959. The interim dividend has been increased from 9d. to 1s. 3d. per £1 unit. A total of 2s. 3d. per unit was paid for 1959. Group sales for the six months rose from £250 million to £288 million. The full year's total for 1959 was £509 million. The increase in the volume of sales to customers at home is ascribed mainly to the progressive increase in the level of industrial activity during 1959 and the early part of 1960. Export sales increased compared with the first half of last year.

**Bristol Siddeley to Manufacture Hydraulic Torque Converters.**—Bristol Siddeley Engines Limited, has concluded an agreement with Svenska Rotor Maskiner, of Stockholm,

for the manufacture, by Bristol Siddeley Power Division in Coventry, of the range of S.R.M. hydraulic torque converters. The dual rotation feature of the S.R.M. converter, it is claimed, combines relatively high efficiency with unusually high torque ratios. Torque ratios at stall of more than 9:1 are achieved. Traction applications include railcars and motor buses.

#### The Corrosion & Metal Finishing Exhibition.

—At the Corrosion & Metal Finishing Exhibition at Olympia from November 29 to December 2, organised by *Corrosion Technology* within the Leonard Hill Technical Group, methods of combating corrosion are to be demonstrated. It has been estimated that the cost of corrosion in some countries such as India and Australia amounts to as much as £100 million annually, and in Great Britain marine corrosion alone costs more than that. A great deal can be done to reduce such losses by the application of the simple cathodic protective devices which will be exhibited.

#### Braithwaite & Co. Engineers Ltd. Results.

—The group trading profit of Braithwaite & Co. Engineers Ltd., for the year ended March 31, 1960, before allowing for taxation was £49,006. After taxation for the year, and crediting £16,300 in respect of adjustments relating to previous years, the resulting net profit was £45,706. A final dividend of 4 per cent is recommended on the ordinary stock, making a total of 8 per cent for the year. A capital distribution of 2 per cent on the ordinary shares out of the surplus arising on the sale of shares in Braithwaite & Co. (India) Ltd. is to be made.

#### Qualcast Limited Plants Work to Capacity.

—Mr. J. E. V. Jobson, Chairman of Qualcast Limited, states that the order books of the company are satisfactory and all plants

are working to capacity. The increased capacity of 1959 has not yet matured owing to mechanical difficulties experienced in getting the new foundry established. Group profits before tax, in the year ended June 30, 1960, increased by 3.7 per cent to £1,311,783, and as stated on September 26 the dividend is 26½ per cent. This compares with the equivalent dividend of 24.1 per cent, less tax, and a tax-free capital profits distribution of 3 per cent. A one-for-two scrip issue has also been proposed.

#### Electric Locomotive Costs.

—The Co-Co single-phase 16.6-cycle locomotives of class E.50 are said to be the cheapest of the modern electric locomotives of the German Federal Railway on a power and weight basis. They have a one-hour rating of 5,850 h.p. and a weight of 126 tonnes (21 tonnes axle load), and the price of recent batches has been equal to DM.1,700,000 (about £145,000), or DM.290 (£25) per h.p. and DM.13,500 (£1,150) per tonne.

#### Covered Railway Cuttings as Car Parks.

—Mr. J. E. Dayton, Joint Managing Director of the Alderton Construction Co. Ltd., speaking at Hammersmith Rotary Club on the occasion of the first anniversary of the opening of Chiswick Flyover, described a scheme, which he called "Operation Canyon," whereby simple roofing over selected railway cuttings could provide parking spaces cheaply and efficiently at key points on the London Transport Underground system. He quoted the cuttings at West Kensington and Hammersmith as good examples of suitable sites.

#### New Signalling Installation at Pelaw.

—A new power-operated signalbox was opened last week at Pelaw, North Eastern Region, British Railways, at the junction of the main Newcastle-Sunderland line with the branch lines to South Shields and Washington. The installation controls 11½ track miles, and incorporates colour-light signalling and route relay interlocking. There are 21 multi-unit type colour-light signals, six of which have junction direction indicators; 10 ground signals for controlling shunting operations, and 15 electro-pneumatically-operated sets of points. The whole of the track under control is divided into 67 track circuits.

#### The Superheater Co. Ltd.

—At a board meeting of The Superheater Co. Ltd., it was resolved that an interim dividend on the issued ordinary and "A" ordinary shares of the company at the rate of 4½d. per share for the year ending December 31, 1960, should be paid less income tax at 7s. 9d. on October 21, 1960, to those shareholders on the register at the close of business on October 6, 1960. Warrants will be posted on October 20, 1960. The board states that for the eight months of this year, compared with the corresponding period last year, the value of orders received has been higher, but sales have shown some decrease. Because of smaller output and narrower profit margins the earnings before tax are considerably lower.

#### Higher Prices Forecast for Iron Castings.

—In a letter to the Industrial Coal Consumers' Council, the Director of the Joint Iron Council, Mr. Kenneth Marshall, describes the effect of the new coal prices on the iron-founding industry and says that in most cases the increased costs will have to be passed on to the consumer. The industry has used 429,000 tons of foundry coke, 66,100 tons of blast furnace coke, 28,300 tons of gas coke and 158,400 tons of coal in the first half of 1960. At this rate of consumption, the proposed increases in solid fuel prices

### Inaugural Run of New "Master Cutler"

(See our September 30 issue)



The Master Cutler, Mr. P. J. C. Bovill (third from left) accompanied by (left to right): Mr. J. Carter, Designer, Pullman Car Co. Ltd.; Mrs. Bovill, Mistress Cutler; Mrs. G. N. Russell, wife of Maj.-General G. N. Russell, Chairman of the Eastern Area Board, B.T.C.; Mr. R. S. Bruce, President, Sheffield Chamber of Commerce; Mr. G. A. V. Hayes, Secretary, and Mr. J. B. Peile, Member, Eastern Area Board; and Mrs. Hayes



would cost the industry some £966,000 in a full year, equivalent to 4s. 9d. on every ton of iron castings produced.

The addition in the price of blast furnace coke will cost the pig-iron makers some £1.7m. for a full year's supply of iron to the iron-founders. This cost, passed on in full, would be equal to 8s. 5d. for each ton produced. If the indirect costs, such as rail transport and electricity, are added the final increase might be equal to or even exceed an average of £1 per ton of iron castings.

#### Desirability of Crane Signal Standardisation.

—The Federation of Civil Engineering Contractors is considering the possibility of establishing a standard system of crane signals in the civil engineering industry. Such a system should help to reduce accidents. The systems at present in use have similar characteristics, but vary in detail.

**New Dagenite Depot in Glasgow.**—Pritchett & Gold and E.P.S. Co. Ltd., makers of Dagenite batteries, is to open a new Glasgow depot on October 3, at Langside Lane, 346, Langside Road, Glasgow, S.2, tel. Pollok 5944-5. The new depot is within 1½ miles of the city centre.

#### International Twist Drill Co. Ltd. Results.

—The Group net profit of the International Twist Drill Co. Ltd. for the period January 1, 1959 to May 31, 1960, was £336,610 (£142,222) after deducting £39,400 in tax and allowing £45,016 for depreciation. No dividend is recommended as against 15 per cent a year ago.

#### Sheffield-Glasgow Overnight Container Service.

—An express goods train conveying containers between Sheffield and Glasgow has been introduced by the Eastern and Scottish Regions, British Railways. It gives an overnight service with deliveries next day of containers of various weights and cubic capacities. The service operates on five nights of the week, from Monday to Friday inclusive. It caters for all container loads for Glasgow presented at Sheffield Wicker depot by 4.30 p.m. Road collection and delivery arrangements for the container traffic have been specially planned to fit the pattern of the new service.

#### L.T.E. Warning of Noise from Night Work on Line.

—London Transport Executive apologised in advance for the noise which is being made at night during track repairs which began on October 3, on the four-mile section of the District Line between Dagenham East and Upminster. A mechanical tamping machine is being used in the work, which will continue until October 28.

#### De Havilland Holdings Limited Reconstitution.

—Following the acquisition by the Hawker Siddeley Group Limited of the stock of De Havilland Holdings Limited, its main function as a holding company has ceased, and the De Havilland management have decided to take the opportunity to merge the businesses of the De Havilland Aircraft Co. Ltd. and De Havilland Propellers Limited. De Havilland Holdings will assume the name of the De Havilland Aircraft Co. Ltd. and acquire all the assets and liabilities of the other two companies. De Havilland Holdings, under its new name, the De Havilland Aircraft Co. Ltd., will fulfil all the legal and other responsibilities of those two companies as well as its own.

#### Hampshire Tour of Railway Enthusiasts' Club.

—A tour by special train of the Aldershot and Alton areas of Hampshire has been arranged by the Railway Enthusiasts' Club for the afternoon of October 15. A two-coach steam push-and-pull train will leave Farn-

borough at 2.5 p.m. and will run via Sturt Lane West Curve, Frimley, and Ash Vale on to the branch to the military power station, the Basingstoke Canal siding, and the Government siding at Aldershot. It will then run over the Bentley-Bordon branch, now closed to passenger traffic, and onwards to Alton. The train will run to the Treloar Hospital platform on the remaining portion of the Basingstoke & Alton Light Railway, and to Farringdon, on the north end of the Meon Valley line. It is due back at Farnborough at 6.25 p.m. The fare is 17s. 6d., with half-fare for children. Application for tickets should be made to Rail Tour Bookings, Railway Enthusiasts' Club, Farnborough, Hants.

#### North British Locomotive Cumulative Preference Shares.

—The board of the North British Locomotive Co. Ltd. does not recommend payment of dividend on the 5 per cent cumulative preference and 5 per cent "A" cumulative preference shares. The dividend on the former shares has been in arrear from January 1, 1956, and that on the "A" preference from January 1, 1959.

#### Expert Tool & Case Hardening Co. Ltd.

—Mr. S. H. Newman, Chairman of the Expert Tool & Case Hardening Co. Ltd., stated recently that if trends in orders and deliveries continued the accounts for 1960 would show a substantial improvement on those for the previous two years. For the eight months to the end of August the value of orders had been 40 per cent higher than for the same period of the preceding year, and deliveries had gone up 25 per cent. Orders on hand at the end of August had been 125 per cent higher than a year earlier.

#### Fatality after Station Collision.

—The driver of a special train which ran into the buffers at Foster Square Station, Bradford, was blamed at an inquest for the accident after which a member of the Sadler's Wells, Opera Company died. Eleven other passengers were injured. The driver claimed that he approached the platform at 10-15 m.p.h., and applied the vacuum brakes, but that they failed to stop the train. He then put the engine into reverse, but it hit the buffers. After the crash, it was stated, the brakes were found to be in good order and fully applied.

#### Ellis Medal for Works Management Awarded.

—The first award of the newly-instituted Ellis Medal for Works Management will be made to Mr. W. Huddleston of the Atomic Staff of the Springfields Atomic Factory, Salwick, Lancs, on October 6, at the first meeting of the 1960-61 session of the Preston Branch of the Institution of Works Managers. Mrs. Ellis, the widow of Mr. John Milton Ellis, will make the award. The Chairman and members of the National Education Committee and of the North Regional Board and officers and members of the Council of the Institution of Works Managers will be present.

#### Scottish Region Fare Reductions.

—Cheap day return tickets are now issued regularly from Edinburgh to Perth and Dundee for the first time. The same fares apply also for passengers from Perth and Dundee to Edinburgh, and cheap day fares have been introduced from Bridge of Earn, Glenfarg, and Mawcarse to Edinburgh, and vice versa. The second class day return fares are: Edinburgh-Dundee via Forth and Tay Bridges, 15s.; Edinburgh-Perth via Forth Bridge and Glenfarg, 11s. 6d.; Edinburgh-Perth via Larbert, 14s. 9d.; Edinburgh-Bridge of Earn, 10s.; Edinburgh-Glenfarg, 9s.; and also Edinburgh-Mawcarse, 8s. 3d. First class fares are about 50 per cent over

second class. For week-end travellers three-day fares are in operation from Edinburgh to Arbroath, Carnoustie, Cupar, Dundee, Leuchars, and St. Andrews and in the reverse direction. Passengers may travel outward at or after 12 noon on Friday or any time on Saturday or Sunday, returning on Saturday, Sunday, or Monday of the same week-end. Examples of the second class fares are: Edinburgh-Dundee, 17s.; and Edinburgh-St. Andrews via Cupar, 15s. 6d.

#### Anglo-American Switchgear Factory Opened at Wolverhampton.

—A new factory for the manufacture of electrical switchgear has been opened by an associated company of the Electric Construction Co. Ltd., Wolverhampton. The new company, E.C.C. (Moulded Breakers) Limited, is a joint venture of the Electric Construction Co. Ltd., and the Federal Pacific Electric Company of America. The production target is 35,000 circuit breakers a month with a labour force of 250. These breakers, which provide complete overload protection without the use of fuses, are supplied singly or mounted on distribution boards of up to 36 units. Initial installations are in operation in the Scottish and Eastern Regions of British Railways for station lighting control and similar duties. (See reference on page 429).

#### Extension of Western Region Pullman Diesel Facilities.

—A study of the new Pullman diesel services recently introduced by British Railways, Western Region, has shown that as the loadings of the morning and evening "Bristol Pullman" are lighter than originally anticipated it is possible to re-route these trains via Bath, instead of Badminton. From October 17, and continuing experimentally on Mondays to Fridays until further notice, the 7.45 a.m. from Bristol to Paddington will be retimed to start at 7.40 a.m., calling at Bath at 7.57 a.m., arriving Paddington at 9.35 a.m., as at present. In the return direction the 4.55 p.m. from Paddington will call at Bath at 6.32 p.m. and arrive Bristol Temple Meads at 6.50 p.m. Alterations to other services will be necessary on Mondays to Fridays in consequence of these changes and the 7.40 a.m. from Bristol to Paddington will depart at 7.45 a.m., running 5 min. later to Paddington than at present. The 9.24 a.m. from Reading to Paddington will leave Reading at 9.21 a.m., 3 min. earlier, arriving Paddington at 10 a.m., and the 4.15 p.m. from Paddington to Plymouth will start from Paddington at 4.5 p.m., running 10 min. earlier as far as Bristol.

#### The George Cohen 600 Group Limited.

—At the annual general meeting of the George Cohen 600 Group Limited, Mr. C. M. Cohen, Chairman & Managing Director, stated that the group turnover had reached the record figure of £36,335,490, which was an increase of 31 per cent on the previous year, but there had been a slight further reduction in the profit ratio. He remarked that he could give no further precise information about the forthcoming rights issue, but he referred to the £1,625,000 of unissued ordinary capital which would remain after the proposed rights issue, and stated that the board considered that it would be wise to take the opportunity of creating a balance of unissued ordinary capital against possible future requirements. There was no intention of issuing any of it immediately. If it was proposed in the future to issue all or part of the remaining £1,625,000 of ordinary capital in circumstances which would result in a radical change either in the control of the company or the nature of its business, the matter would first be referred to the stockholders in general meeting. It was proposed that the capital of the company should be

increased to £9,000,000 by the creation of 8,000,000 ordinary shares of 5s. each and that such shares when issued fully paid up should be converted into Stock. The resolution was put to the meeting and carried.

**Closure of Wassand Public Delivery Siding.**—British Railways, North Eastern Region, have announced that, because of the loss which is being incurred, the public delivery siding at Wassand will be closed on October 31, 1960. Approval for this measure has been given by the Transport Users' Consultative Committee for the Yorkshire Area. Alternative facilities for freight traffic are available at Sigglethorne and Hornsea Bridge Stations.

**R.C.H.S. Isle of Wight & West Sussex Tour.**—Railways in West Sussex and the Isle of Wight were inspected on September 17 and 18 on a tour arranged by the Railway & Canal Historical Society. This included station sites on the former Isle of Wight (Newport Junction) (later part of the Isle of Wight Central) and Freshwater, Yarmouth & Newport Railways, also the Brading Harbour line, from which a train ferry operated to the mainland at Langston Harbour for some years in the 1880's. On the second day the party visited the Chichester to Midhurst and Midhurst to Petworth and Hardham Junction lines of the former L.B.S.C.R. The tour ended at Guildford, after inspection of the derelict Arun Navigation and Wey & Arun Junction Canal which formed part of a pre-railway link between London and Portsmouth.

**Wagon Repairs Limited Results.**—The group net profit of Wagon Repairs Limited for the year ended March 31, 1960, was £459,581, after deduction of tax, compared with £385,462 for the preceding year. The dividends payable to the holders of the preference and ordinary stocks represent a return of nearly 10½ per cent, less Income Tax, on the capital and reserves of the group at March 31, 1960, i.e. £3,318,220. At the forthcoming annual general meeting the board will recommend to the stockholders the distribution of the sum of £165,315, being 9d. per 5s. unit of ordinary stock, out of the realised accretion to capital arising from the winding up of two of the company's subsidiaries, Thomas Burnett & Co. Ltd., and the Principality Wagon Co. Ltd. A new subsidiary company, which is trading under the same name, has been incorporated and has taken over the assets and business of the Principality Wagon Co. Ltd.

## Forthcoming Meetings

- October 10 (Mon.).—Institute of Transport, at 5.45 p.m., at 66, Portland Place, London, W.1. Presidential address, Mr. K. W. C. Grand.
- October 11 (Tue.).—British Railways Bristol Lecture & Debating Society, at the Staff Association Building, Temple Meads Station, Bristol, at 6 p.m. "Modernisation," by Mr. M. G. R. Smith.
- October 11 (Tue.).—The Railway Correspondence & Travel Society, East Midlands Branch, at Thurland Hall, Nottingham, at 7.30 p.m. Photographic account of Scottish Tour.
- October 11 (Tue.).—Institute of Traffic Administration, Preston Branch, at Victoria & Station Hotel, at 7.30 p.m. "Travel Abroad," by Mr. G. Harris.
- October 11 (Tue.).—The Institution of Civil Engineers, at Great George Street, London, S.W.1, at 5.30 p.m. "The

Fire Resistance of Prestressed Concrete Beams," by Mr. L. A. Ashton and Mr. S. C. C. Bates.

October 13 (Thu.).—Institution of Railway Signal Engineers, York Branch, at the Signalling School, York, at 5.30 p.m. "Development in Mechanical Signalling Equipment," by Mr. D. Peverley.

October 13 (Thu.).—The Institution of Civil Engineers, Traffic Engineering Study Group, at Great George Street, London, S.W.1, at 5.30 p.m. Informal discussion on "Economic and Efficient Traffic Surveys," introduced by Mr. F. Garwood.

October 13 (Thu.).—London Midland Region Lecture & Debating Society, at Friends House, Euston Road, London, N.W.1. Debate on the motion "That Faster Trains are More Important than Brighter Stations."

October 14 (Fri.).—Railway & Canal Historical Society, West Midlands Section, at the Engineering Centre, Stephenson Place, Birmingham.

October 15 (Sat.).—Institution of Railway Signal Engineers, Bristol Branch. Visit to Margam Marshalling Yard.

October 15 (Sat.).—The Railway Enthusiasts' Club, Hants Branch. Aldershot Area Rail Tour. Train leaves Farnborough Main Station at 2.5 p.m.

## Railway Stock Market

Stock markets again moved lower, but the set-back was much less than might have been expected, in view of international developments. There are fears that the decline in export trade has not been checked, and continued doubts that, in the circumstances, easing of the credit squeeze is unlikely. Buyers were extremely cautious, though investors generally kept calm, and there was no big increase in selling.

Among foreign rails, however, encouragement was given by the Antofagasta preference dividend payment; compared with a week ago the ordinary stock has strengthened from 12½ to 12½, and the preference stock was 32½, compared with 31. Costa Rica ordinary stock was 39 with the first debentures 94½ and the second debentures 112.

Brazil Rail bonds were quoted at 5½, and Chilean Northern first debentures at 55½.

United of Havana second income stock remained at 6, Sao Paulo Railway 3s. units were again 1s. 1½d. Mexican Central "A" bearer debentures remained at 58½. International of Central America common shares were quoted at \$26½ with the preferred stock \$102. Guayaquil & Quito assented bonds were 69½ and Paraguay Central prior debentures 15.

Canadian Pacifics, reflecting Wall Street, declined on balance from \$40½ to \$39½: the preference stock eased to 60½ and the 4 per cent debentures to 63½. White Pass shares were \$11.

Nyasaland Railways shares kept at 9s. with the 3½ per cent debentures 45½. Midland of Western Australia ordinary stock was quoted at 6½ with the second income stock at 27½. West of India Portuguese stock was 110½xd and Barsi Light Railway 17½.

Among shares of locomotive builders and engineers, Beyer Peacock 5s. shares at 7s. 4½d. were little changed with a week ago, but Charles Roberts eased from 8s. 9d. to 8s. 6d., and, elsewhere, Westinghouse Brake lost 1s. at 46s. 3d. Birmingham Wagon have been steady at 33s. 4½d., and North British Locomotive changed hands around 9s. 6d.

In other directions, Wagon Repairs 5s. shares remained a firm feature and were higher at 19s., though in other directions,

Gloucester Wagon 10s. shares, which were again affected by the results, were easier at 11s. 6d. Business up to 14s. 6d. was shown in G. D. Peters shares. Reflecting the general trend in stock markets, Pressed Steel 5s. shares eased from 27s. 9d. a week ago, to 27s., while Dowty Group 10s. shares at 36s. compared with 37s. 3d. a week ago.

Vickers at 32s. have been quite well maintained, but in other directions, Ruston & Hornsby dropped back from 26s. 6d. to 25s. 6d., at which there is a 7 per cent yield on last year's 9 per cent dividend. Guest Keen receded from 95s. to 93s. 3½d., Stone-Platt shares have held steady at 57s. 6d., and on balance, T. W. Ward have risen from 77s. 9d. to 81s. 6d. G. & J. Weir 5s. shares at 18s. 6d. were slightly higher on balance. Pollard Bearing 4s. shares were 47s. 3d. and Ransome & Marles 5s. shares 26s. 3d. Tube Investments eased to 81s. 9d. with the general trend and Metal Industries to 65s. Broom & Wade 5s. shares eased to 21s. Among machine tools Alfred Herbert eased to 58s. 3d. Mather & Platt were 48s. 9d.

## OFFICIAL NOTICES

### Foreign Employment

#### ROADMASTER

**ENGINEERING GRADUATE** preferred; minimum of two years engineering training essential.

Require two years varied railroad engineering service, or five years in direct charge of track crews. Will supervise 135 men maintaining 45 mile railroad, assign work, order materials, be responsible for safety, make regular detailed inspections of roadbed and all track on main line, sidings and yards, bridges, tunnels, etc. Will make engineering calculations relating to maintenance and use of structure and equipment. Must speak Spanish. Married or single candidates acceptable.

Excellent opportunity large copper company, Chile, South America. Two year contract with transportation both ways for you and family. Basic salary \$525.00 to \$650.00 per month depending upon age and experience of applicant.

Box 6, The Railway Gazette, 33 Tophill Street, S.W.1.

**REQUIRED** for the Southern Railway of Peru. Diesel Engineer (operation). Must have served a full apprenticeship in an engineering workshop (preferably locomotive) and had at least two years subsequent experience as an administrative and technical officer on Diesel Electric Locomotive manufacture or maintenance. Should have a technical education up to the National Certificate standard in mechanical engineering. Must be fit and able to travel at an altitude up to 16,000 feet. Salary offered £1,500 per annum. Please apply in writing to:—Peruvian Transport Purchasing Company Limited, Suffolk House, 5, Laurence Pountney Hill, Cannon Street, London, E.C.4.

**THE SUDAN GEZIRA BOARD** invites tenders for the supply of:—

- 6 Junior Type Motor Inspection Cars
- 2 Senior Type Motor Inspection Cars
- 18 Diesel Main Line Locomotives, 120 h.p.
- 16 Diesel Main Line Locomotives, 80 h.p.
- 14 Diesel Shunting Locomotives
- 26 Steel Framed Hand Pump Trolleys
- 60 Cms. Gauge.

Interested suppliers should write to the representative of the Sudan Gezira Board, Castle Chambers, Castle Street, Liverpool, 2, for specifications and conditions.

**THE SUDAN GEZIRA BOARD** invites tenders for the supply of:—

- Eight (8) Pressed Steel Tanks 12 ft. x 12 ft. x 8 ft.
- 6,771 gals. capacity.

Interested suppliers should write to the representative of the Sudan Gezira Board, Castle Chambers, Castle Street, Liverpool, 2, for specifications and conditions.

**THE SUDAN GEZIRA BOARD** invites tenders for the supply of the following:—

- 580 Twin Bogie Steel Flat Wagons—9 tons capacity
- 3 Twin Bogie Steel and Aluminium Box Wagons—9 tons capacity
- 120 Twin Bogie All Steel Box Wagons—9 tons capacity
- 6 Twin Bogie 2,000 Gallon Water Tank Wagons
- 15 Twin Bogie 2,000 Gallon Oil Tank Wagons
- 24 Twin Bogie Guards Wagons.

Interested suppliers should write to the representative of the Sudan Gezira Board, Castle Chambers, Castle Street, Liverpool, 2, for specifications and conditions.

